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A GUIDE FOR TECHNOLOGY COORDINATORS

**A Project
Presented to the
Faculty of
California State University,
San Bernardino**

**In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education: Instructional Technology**

**by
Sally Anne Miller
December 1996**

A GUIDE FOR TECHNOLOGY COORDINATORS

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11/27/96
Date

ABSTRACT

The following document contains research and information regarding the role of the Technology Coordinator in schools. The areas of discussion include a report on the job responsibilities Technology Coordinators will face, the Technology Coordinator's specific duties as a network administrator and policy maker, and the importance and significance of a successful technology staff development program. Also included, as part of the project, is an Electronic Handbook on a CD-ROM. The Electronic Handbook is comprised of an Authoring Workshop component and a Resource Center component. The Authoring Workshop presents guidelines for developing a technology staff development program. The Resource Center is a collection of information and resources for Technology Coordinators.

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TABLE OF CONTENTS

ABSTRACT	iii
ACKNOWLEDGMENTS	iv
CHAPTER ONE	
Introduction	1
CHAPTER TWO	
The Role of the Technology Coordinator	
Qualifications and Responsibilities	5
Support Staff	9
The Technology Coordinator as Network Administrator	
Defining a Network	11
Features of a Network	13
Disadvantages of Using a Network	17
Responsibilities of a Network Administrator	19
The Technology Coordinator as Policy Maker	
Acceptable Use Policies	24
Acceptable Use Policies and Internet Access	28
The Technology Coordinator and Staff Development	
Existing Programs	31
Methods and Approaches	35

Keys to Successful Programs	39
CHAPTER THREE	
Electronic Handbook Objectives	46
CHAPTER FOUR	
Design and Development of the Electronic Handbook	48
Content and Structure	50
Design and Development of the Authoring Workshop	52
Planning	52
Design	54
Implementation	58
Evaluation	69
How to Use the Authoring Workshop	71
Design and Development of the Resource Center	77
How to Use the Resource Center	77
Formative Evaluation of the Electronic Handbook	84
Strengths and Limitations of Project	85
APPENDIX A: Acceptable Use Policies	
Exemplary School District	87
DeForest Area School District	92

APPENDIX B:

Descriptive Text of the Jane Goodall Multimedia Software	95
---	----

APPENDIX C:

The Jane Goodall Multimedia Software Questionnaire	98
---	----

APPENDIX D:

How to Install and Use the Electronic Handbook	101
---	-----

APPENDIX E:

The Electronic Handbook CD-ROM	102
--------------------------------------	-----

REFERENCES	103
------------------	-----

CHAPTER ONE

Introduction

Computer technology has become so powerful that it is changing virtually every aspect of modern life. Children growing up today must be equipped with skills to operate and succeed in an electronic world. While not every adult is comfortable with technology, young people and students must learn to use various technologies. Information is the key to every students' future (Siegel, 1995a).

Though the future is based on information, it is not enough to have information resources and technology as an end to itself. Schools have to prepare kids to live in a technology-rich environment (Siegel, 1995a). Students must learn how to access, understand, process and use information. "Two-thirds of all new jobs in the near future will require some knowledge of computers," says Harvard sociologist William Julius Wilson. "If these kids graduate and are not computer-literate, what chance do they have?" (Harmon, 1996, p. D1).

The use of instructional technology continues to increase in schools. Moursund (1992) cites figures which show that the number of computers installed in schools has doubled over the past decade. The current ratio of computers to students in US schools is estimated to be approximately 12 to 1.

Technology in the learning environment may appear in something as basic as word processing or as complex as multimedia or the Internet. As schools prepare to move into the 21st-century, using technology will probably become one of the basic literacy skills alongside reading, writing and arithmetic. A world of unlimited learning and resources confront today's students. Students will learn to use technology in order to learn better. Students are going to need these skills in order to function in their day-to-day jobs in the future. Technology skills are not only educational skills, they are also life skills. Those who have the best tools and know how to use them will get the job done best.

To assist them in gearing up for this new revolution in teaching and learning, many schools and districts are hiring or appointing Technology Coordinators or Technology Directors. Technology Coordinators are being recruited from assorted backgrounds including business, military, professional training and education. Many colleges and universities are offering degree programs in instructional and educational technology.

These Technology Coordinators will shoulder the vast responsibilities of implementing academic technology in the schools. Moursund (1992) says:

Based just on the sheer amount of hardware and software in schools, one could argue that every school will need one or more Technology Coordinators. However, it is not just the total quantity of computer equipment in a school or district that determines if a Technology Coordinator is needed. A more important factor is the nature and extent of use of this equipment (p. 20).

The Technology Coordinator will play a leadership role in staff development, technical support, curriculum development, planning and budgeting (Moursund, 1992).

Lockard, Abrams and Many (1994) also emphasize the need for Technology Coordinators to take a lead role by stating:

Early in the planning process, schools should address the issue of a Technology Coordinator. Successful changes in education requires effective leadership. Integrating computers throughout the curriculum for effective learning is an enormous task. There are many issues to face, many decisions to make, and someone has to be in charge (p. 390).

As technology's role in our schools grows and changes, so does the Technology Coordinator's schedule of responsibilities. Technology Coordinators and administration must be aware of this evolution and its implications. The Technology Coordinator will have an impressive list of responsibilities and the most critical of these responsibilities may be in the area of staff development. "Ask any group of educators about the challenges they face in building an effective technology program in their schools, and they are bound to bring up the issue of staff development (Schmeltzer, 1995, p. 45). Teachers have to be trained how to use technology. Only then can technology become a part of their classroom teaching (Siegel, 1995a).

This project will serve as an information resource for Technology Coordinators. As technology's role in schools grows and changes, so does the Technology Coordinator's schedule of responsibilities. Technology Coordinators

must be aware of this evolution and its implications. This project is designed to assist the Technology Coordinator in managing their daily tasks. This will be accomplished by providing information related to the Technology Coordinator's job responsibilities including the areas of network administration, policy making and staff development.

The project includes an Electronic Handbook on a CD-ROM. The handbook is comprised of an Authoring Workshop and a Resource Center.

The Authoring Workshop presents guidelines for developing a successful technology staff development program. These guidelines encompass the areas of planning, design, implementation and evaluation. In support of these guidelines, the Electronic Handbook presents the Jane Goodall multimedia software program, which is the product of the Authoring Workshop.

The Resource Center component of the Electronic Handbook is a collection of resources for Technology Coordinators. The Resource Center includes sample policies, publications and organizations for Technology Coordinators, and a list of useful Internet addresses.

CHAPTER TWO

The Role of the Technology Coordinator

Qualifications and Responsibilities

For the purpose of this project, the terms Technology Coordinator, Computer Coordinator, Academic Technology Director and Technology Director are used interchangeably.

The Technology Coordinator holds what is still a relatively new position in most schools. Moursund (1992) notes that the duties and demands of a classroom teacher or computer teacher differ substantially from those of a Technology Coordinator. He also noted that the preparation and qualifications to be a computer teacher may not be those that are needed to become a Technology Coordinator.

According to Moursund (1992), Technology Coordinators must have very broad academic and curriculum skills. Technology Coordinators must have a comprehensive knowledge of technology and how it can be applied in schools. While this knowledge should cover many areas, it should be particularly strong in areas of integrating the computer as a tool and using the computer as a delivery system or computer-assisted learning.

Apablaza (1996) also underscores the importance for Technology Coordinators to have a solid background in curriculum. Apablaza explains that a Technology Coordinator needs to have a good working knowledge of technology, a strong background in curriculum and the ability to instruct teachers on how to integrate technology into their curriculum.

According to Finkel (1995) in the California Guidelines for a Technology Coordinator, computer and technology resource personnel should demonstrate the skills required of all teachers receiving a clear credential commencing in July of 1988, and, additionally, should be able to:

- assist teachers with the incorporation of computer-based technologies into their curriculum and with the application of the technologies to the development of appropriate classroom management strategies;

- demonstrate mastery at integrating computer-based technologies into a minimum of two curriculum content areas, by designing and delivering a sequence of lessons to students;

- use principles appropriate to adult learning to organize, prepare and conduct effective staff development in the use of computer-based technologies in specific curriculum areas;

- demonstrate an understanding of appropriate lesson plan design in the development of curriculum units involving computer-based technologies;

- develop effective plans to manage facilities and material, including but not limited to the;

 - development of a master schedule for student classes and plant utilization;

 - selection of computer hardware and software;

 - planning for the acquisition, cataloging and distribution of materials;

 - operation and maintenance of computers and related technologies; and

 - identification and use of community resources; and

assess and promote the changes necessitated by the infusion of technology into the school setting (p. 15).

The literature concurs that a Technology Coordinator should have an extensive knowledge of technology and a strong academic background, in order to effectively integrate technology into schools.

The roles and responsibilities of the Technology Coordinator generally center around training, maintaining, supervising and planning technology use in schools (Moursund, 1992). Moursund lists 13 possible responsibilities of a Technology Coordinator:

1. providing immediate help to teachers and students
 2. planning for long range school and district technology integration
 3. addressing technology-related curriculum articulation questions
 4. developing short and long-range plans for implementation goals
 5. helping teachers develop technology-related materials and lessons
 6. providing computer-related inservice education and training
 7. responsible for school hardware, software and other materials
 8. technology budget responsibilities
 9. acting as a resource for a wide range of technology questions
 10. assisting in the teaching of computer-based subjects
 11. developing and implementing evaluation procedures
 12. assisting school non-teaching personnel with technology use
 13. maintain personal and professional growth to keep up with the field
- (p. 28-29).

Moursund (1992) emphasizes that the Technology Coordinator must be aware that the overall goal of technology in schools is to improve the quality of education.

The article "The Responsibilities of an Academic Technology Director" (1996) suggests that the major responsibilities of the Technology Coordinator should include:

training and assisting teachers throughout the year - in small groups or one-on-one - so they become familiar with the basics of the school's network and computer systems. The Technology Coordinator should meet regularly with each teacher to review the classroom use of technology and recommend alternatives as they become available;

working closely with the Information Systems Director and the technical support staff. This is particularly crucial if a school is "internetworking" - connecting two or more local area networks (LANs) together to form a school-wide internetwork - and security issues arise. The two managers must collaborate to determine how administrative and academic "traffic" will flow on the internetwork, providing appropriate levels of data security for all users on the system. For example, students may be granted access to the library automation system or be able to send E-mail, but shouldn't have access to the administrative file server;

keeping up on emerging technologies and staying current with available software, always looking for innovative ways to match software to the school's curriculum;

demonstrating new software and equipment to teachers and students as it arrives. The Technology Coordinator must make sure that new software and hardware meet network requirements;

informing teachers and administrators of upcoming technology workshops and conferences;

working with the Business Manager to make purchasing decisions concerning academic technology;

providing the development office with needed information for fund raising;

enforcing (and perhaps writing) policies for ethics, copyright infringement, and piracy as they relate to computers. This includes training students and staff in appropriate uses of technology in teaching and learning, and ensuring that they know the requirements of the school's acceptable use statement and the inherent responsibilities;

providing support and answering questions for concerned parents; and, perhaps most important;

keeping the program on track. The curriculum should drive the technology, not vice versa (p.2-3).

The Technology Coordinator's responsibilities seem to fall into four main areas: working with teachers, working with students, managing computer facilities and working with administrators. The literature indicates that every school will have different requirements, but the responsibilities outlined above are fundamental for every Technology Coordinator.

Support Staff

Will a single Technology Coordinator be able to manage all of these responsibilities? It is becoming apparent that Technology Coordinators run the risk of being overloaded with too many duties and responsibilities. In the beginning phases of a Technology Plan, a single person may be able to carry the load. As systems evolve and grow, the Technology Coordinator's time should be spent concentrating on the applications of academic technology and not the technical maintenance of the systems.

Anderson (1993) insists that there will have to be multiple coordinators, not just one per school. Anderson notes the lack of adequate support for

classroom teachers' use of technology, and the need for more Technology Coordinators to provide that support.

As technology is integrated into the curriculum, schools could easily find themselves maintaining 100 or more computers and other hardware components on a single campus. Industry dictates that Information Systems Managers will need one full-time support person for every 50 to 100 computers on a network. Higher estimates might say every 100 computers. Some experts would contend that school systems require more support than business systems. The importance of having reliable systems cannot be overstated and the division of responsibilities (instructional and technical) has worked well for the schools that have tried it ("Recruiting", 1996).

If a single Technology Coordinator is expected to manage all of the responsibilities associated with technology in the school, then such an individual will be overwhelmed and "stretched to the limit." As one school administrator said, "We need a full-time education person and a full-time technical person. Doing anything less is trying to implement a 21st-century plan using 19th-century logic" ("Recruiting", 1996, p. 1).

One of the most important technologies of the 21st-century is computer networking. One area of a Technology Coordinator's responsibilities is managing computer facilities, and that will include managing the computer network. The following section introduces the concept of computer networking and defines the Technology Coordinator's role in managing this technology.

The Technology Coordinator as Network Administrator

Defining a Network

Schools all over the country are planning or installing networks. It used to be that networks referred to talking with colleagues, or brought to mind images of the Old Boys. Now networking usually refers to electronic connecting. McCain and Ekelund (1993) define a network as the interconnection of computers for the sharing of information and resources. Lowe (1994) defines a network as two or more computers connected together so they can exchange information.

Networks are commonly referred to as local area networks or wide area networks. LAN is an acronym that stands for local-area network. WAN is an acronym that stands for wide-area network. Barron and Orwig (1995) discuss the similarities between most networks beginning with the proximity of computers. The computers connected to a LAN are usually within the same room or building. In some cases, a LAN might be spread across several buildings, as on a typical school campus. Computers on a LAN are rarely more than a mile apart. A WAN typically connects together a number of LANs, across a city, state, or greater distance (Farmer, 1995).

In a typical network, all of the computers in an office or building are hooked together using cables and special network interface cards in each computer. Each computer connected to the network is called a node and when a computer is turned on and able to access the network, it is said to be on-line (Lowe, 1994).

When planning a network, one important consideration is the shape of the network and how its computers and cables are arranged (McCain and Ekelund, 1993). This design is termed topology. Lowe (1994) explains there are three basic topologies including bus, ring and star.

In the bus topology, computers are strung together in a line. it is the simplest and most popular topology but it has its drawbacks. If the cable breaks somewhere in the middle, it splits the network into two pieces and some computers will lose their network access.

Ring is the second type of topology. With a ring network, the computers are arranged to form an endless loop. The third type of topology is the star. In a star network, the computers are all connected to one central computer or hub. Each computer has its own, independent connection to the network, so a break in one cable does not affect all of the other computers.

There are also different types of cable. Two of the most common are coaxial and twisted pair. Coaxial cable looks very similar to the cable used to provide cable service to a television. Twisted pair cable looks like a phone cable.

Network interface cards allow the cables to be connected to the computers. The connector on the network interface card must match the type of cable being used. Most network interface cards must be configured before they are installed. Lowe (1994) explains, the configuration usually involves physically setting switches. With some cards, the configuration is done with software.

In summary, a network is two or more computers hooked together so they can exchange information. The computers on a network are connected by cables and network interface cards. The design or arrangement of the computers is the topology. Planning, designing and installing a network can be a challenging task, so why bother? The benefits of having a network will make all of the hard work worthwhile (Lowe, 1994). The following section will discuss the features and benefits of networking.

Features of a Network

Networking provides education and schools with a number of promising features. The whole idea behind connecting computers together to form networks is to share information, software, other resources and to provide security (McCain and Ekelund, 1993).

Daly (1994) says:

Those who believe that computers are tools to enhance the learning process must work to provide sufficient numbers of computers for students and teachers. All must have easy and equal access to the

technology. Local area networks provide just such a delivery platform, because networks by their very definition connect computers together, so that units can communicate with each other, share software, information and resources (p. 11).

The concepts of information sharing, resource sharing and security, are critical features of a network and will be discussed in the following paragraphs.

The ultimate reason to network is to share information: to communicate and move data and other information between computers and people (Farmer, 1995). Networks allow every computer attached to the network to "talk" to one another.

In a typical LAN, a single computer is designated as the file server. This one computer features a large hard disk that holds the data and the software programs being used by the computers on the network. The file server also runs the operating system software that makes the network connectivity work. The network software helps the computers attached to the network recognize each other and, subsequently, communicate and share information. Some examples of network software include Novell Netware, Windows for Workgroups, Windows NT, LANtastic and LocalTalk.

When compared to alternatives, a LAN offers a more rapid method of sharing files. For example, without a LAN, files are shared by copying them to floppy disks, then carrying the disks from one computer to another. This method of exchanging information has been termed "sneakernet" (Lowe, 1994). This rapidly becomes time consuming when more than two or three computers are

involved. It is a lot faster and cheaper to send a series of announcements electronically to a group of people, than to type and deliver them individually. Electronic messaging also cuts down on telephone tag (Farmer, 1995).

The addition of electronic mail can improve and increase communication between teachers, students and administration (Whitaker, 1996). Information sharing may also include shared calendars, schedules, student information, lesson plans and budgets (McCain and Ekelund, 1993). Increasingly, schools are including Internet connectivity as a component of their networks.

Another prime reason for networking is to allow for the sharing of resources. Resources that may be shared include, but are not limited to, software, printers, plotters, CD-ROM drives and modems (Lowe, 1994).

Sometimes it is most efficient to put software programs that everyone uses on a shared disk or file server. This may be preferable to keeping separate copies of a program on each computer. Lowe (1994) suggests there are advantages and disadvantages to sharing programs on a network. On the positive side, one of the biggest advantages of using a network involves the ease of updating or adding software. Because only one copy of the software is running from the file server, that copy is the only copy that needs to be updated. All individual workstations on the network use that single copy of each program. A school network may include from 5 to 250 workstations so the time savings is substantial. For example, a simple software installation may require 30 minutes

of time, for one installation. If that same software needed to be installed on 25 computers, the time requirement jumps up to 750 minutes, or 12.5 hours.

Sharing software also has cost considerations. Typically, the network version of a software application is more expensive than a single version of the same software. However, a network version may be cheaper than multiple single-user copies. For example, a network version of a specific software program may cost \$1,000. A single-user version of the same software may cost \$50. If a network has 25 computers then the cost to install the single-user software on all 25 computers would be \$1,250. The network version would be the less expensive solution.

On the negative side, network versions of software can be difficult to configure properly. Lowe (1994) explains that programs might also run slower from a network.

Resource sharing can cut down the cost of purchasing expensive peripherals. An entire office or lab of computers may share a single printer, plotter, or a single modem. CD-ROM drives may also be attached to the network and shared by multiple computers on the network. Sharing peripherals means not having to purchase the hardware for every computer (McCain and Ekelund, 1993).

Security is the third feature of networking. Most schools are lucky enough to have no need for metal detectors and security guards patrolling the hallways. But who has ever heard of a school that doesn't lock their doors at night?

Schools should take some basic precautions to protect their facilities against vandalism and intruders. A network is no different (Kongshem, 1995).

Kongshem lists some basic safeguards a school's Network Administrator should employ:

- enforce a strong password policy by using software to force users to change their passwords

- make sure students and staff understand they must never tell anyone their password

- upgrade all software to recent versions - thus incorporating fixes for known security bugs

- don't overlook the fact that allowing students and staff access to the school's network from home is a security risk

- use SATAN software to identify and report security problems without exploiting them (p. 2-3).

There are many ways to approach security. The Network Administrator has the ability to control information on computers and on the network.

However, "many of the security issues depend on human actions, not on what may be built into the system" (Whitaker, 1996, p. 44).

Disadvantages of Using a Network

Holte (1995) suggests many schools might feel overwhelmed by the pressure of increased competition and the time and energy required to establish

a school-wide network. These are not the only potential disadvantages to using a network.

In their research, Barron and Orwig (1995) describe some disadvantages of using networks. Perhaps the greatest weakness in any LAN is that a failure in the file server stops the whole system. It can be very frustrating to have 20 or 30 computers that are useless because the necessary software is on a broken file server. The network must be reliable and supported. Whitaker (1996) stresses, "nothing is worse than getting everyone using the system and then having a breakdown at a critical time" (p. 43). Of course, all times are critical to users who depend on the system to perform their jobs. Reliability should be a key consideration in building a network. Fortunately, proper attention to LAN maintenance will prevent most serious problems.

Another potential area of weakness in most LANs is the interconnecting cable system. Problems with LAN cables can cause anything from minor interruptions to complete failures in LAN systems. Large, complex LANs might require complex diagnostic tools to help locate and correct cable problems.

One of the less obvious problems with LANs is that they demand consistent daily management. New students must be registered before they can use the LAN. Software must be updated or added on a regular basis. Minor problems with printers must be corrected before unmanageable backlogs of print requests accumulate. These maintenance requirements can become a burden to an otherwise busy individual.

The high initial installation cost of networks may be prohibitive. A LAN can be expensive to install. This is particularly true when a LAN is installed in an older building where the cabling requirements were not anticipated at the time the building was constructed. The apparent high price of a LAN can be misleading, though, because the actual cost of operating the same number of unconnected computers is usually even higher.

All in all, once in place and running smoothly, a network makes life easier for all concerned (McCain and Ekelund, 1993). Effective network administration involves intelligent planning and design, constant maintenance and upkeep and the implementation of effective security measures. The Technology Coordinator must understand the importance of effective network administration and managing the information resources.

Information sharing, resource sharing and security are fundamental network features. These powerful features need to be managed. As a network administrator, the Technology Coordinator will shoulder these networking responsibilities.

Responsibilities of a Network Administrator

There is more to networking than installing the equipment and software. Once a network is up and running, it has to *stay* up and running. That is called

network administration. As Network Administrator, the Technology Coordinator will be responsible for maintaining the network.

The importance and magnitude of this task is often underestimated. Network Administrators spend so much time planning and creating a network, that they often feel the critical part of the job is finished when the network is up and running (McCain and Ekelund, 1994). The amount of time needed for network administration will vary depending on the size of the network. Lowe (1994) suggests that for a small network of three to four computers, a few hours a week is enough. Larger networks will take more time to manage. Much of the network administration performed by the Technology Coordinator will be routine maintenance.

As Network Administrator, the Technology Coordinator will be kept busy managing the network's hardware- the cables, network interface cards, computers, printers and so on. On a large network these responsibilities can themselves become full-time jobs. There are, however, additional responsibilities involved in network administration.

Lowe, (1994) and McCain and Ekelund (1993) agree that one of the most challenging tasks for the Network Administrator is keeping the software applications up to date. The Network Administrator must be aware of advances taking place in software development and bring new software tools to the attention of the users. McCain and Ekelund insist this is especially important

because many users are not computer-literate enough to appreciate the importance of new software.

Another part of keeping applications up to date involves the testing and evaluating of new software. The Network Administrator will be responsible for upgrading and maintaining software. This person will be expected to read about the new versions of software and decide whether its new features are beneficial enough to warrant an upgrade (Lowe, 1994). If the decision is in favor of upgrading, then the Network Administrator will perform the installation.

Software must be tested to make sure it will run successfully on the network. Many programs will run fine on a computer that is not attached to the network, but will not run properly when installed on the network.

Finally, when new software is installed, users need to be trained and informed. This means the Network Administrator must have a certain level of comfort with the software in order to conduct the training.

Network administration involves more than keeping software applications up to date. Other responsibilities involve performing backups, maintaining system documentation, monitoring for viruses, managing disk space and managing users. These responsibilities will be discussed in the following paragraphs.

It is the Network Administrator's duty to make sure the network is properly backed up. To make a backup means to make a copy. It is necessary to develop a good backup strategy and schedule. "Most people are too lax when it

comes to developing backup procedures," states Tittel and Connor (1993). A backup procedure becomes even more important when people begin to store information on a network.

Tittel and Connor continue to point out that not every file on the network will need to be backed up daily. A backup of all files should be performed occasionally. Daily backups should include files that change over time like documents, and databases. The Network Administrator will be responsible for performing and verifying backups.

The Network Administrator will be responsible for documenting the network and keeping that documentation up-to-date. This process also includes keeping an inventory of hardware and software. Network documentation should include an up-to-date diagram of the network and copies of essential startup files. Tittel and Connor (1993) further suggest maintaining a network map and a database of system configurations.

Checking for viruses is another network management chore. Viruses move from computer to computer and may reside on floppy disks as well. The connectivity of networking provides avenues for viruses to travel from computer to computer. That is why networked computers are especially vulnerable to virus attack (Lowe, 1994). The Network Administrator will need to select an antivirus program that has the ability to detect and remove viruses.

The Network Administrator must manage files and space on the network. McCain and Ekelund (1993) cite disk or space management as one of the

biggest tasks in maintaining a network. Users of a network may create files, save them on the network, and leave them there forever. The Network Administrator must manage space on the network by deleting files, moving files and advising users of space restrictions (Lowe, 1994).

Lowe (1994) suggests that the biggest challenge of managing a network is managing the network's users. It is the Network Administrator's job to manage user accounts, passwords and access rights.

Each user of the network must have an account setup on the network. This account and its corresponding user name and password permits access, or logging in to the network. The Network Administrator must manage these accounts which includes creating and deleting accounts as users come and go.

The use of passwords is another important aspect of network security. Network users may know each other's login codes but passwords are kept secret. The Network Administrator must assign initial passwords, change passwords and work with users when they forget passwords (McCain and Ekelund, 1993; Lowe, 1994).

Access rights are assigned along with each user account. Access rights can prevent users from seeing files or allow users to read certain files but not modify or delete them. Files may be marked as private, public, or read-only. Private user space is usually only accessible by one user. Public spaces are usually accessible by specific groups of users. A read-only designation guards against any changes being made to the file, but makes the file available for use.

It is the Network Administrator's job to manage the access rights on the network (McCain and Ekelund, 1993).

Network Administration is just one of the hats a Technology Coordinator will wear. A review of the literature has shown that many schools may find a need for a second Coordinator. Many of the network administration and maintenance responsibilities could be re-assigned to a second Coordinator or technical support person.

Networks will provide students and faculty with access to an enormous amount of information. This is especially true as increasingly, schools are including Internet access as a component of their LANs. Technology Coordinators have yet another responsibility and that is to act as policy makers in managing the appropriate use of information resources.

The Technology Coordinator as Policy Maker

Acceptable Use Policies

Networks and other information resources provide an avenue for accessing computers and people all over the world. Schools will be providing students and staff with access to e-mail, databases, libraries, software and a virtually unlimited number of resources. Technology opens access to materials

beyond our reach and ability to control. Downloading text from software programs is easier than hand-copying pages from an encyclopedia - and does not require much reading (Carlson, 1995). Students are much more at ease with these possibilities than are teachers and parents. Sometimes this leads to feeling pressured to censor or deny access completely.

Carlson (1995) insists that good sense and the conditions of a technological world reveal that the solution lies elsewhere - in an Acceptable Use Policy (AUP). Research supports the theory that schools should establish Acceptable Use Policies to address appropriate use of information resources. An AUP is a set of guidelines for the exploration and use of information resources as a learning tool. The emphasis on these policies should be on appropriate use, without any intent to diminish the "vital nature" of electronic information services (California Department of Education, 1994).

The California Department of Education (1994) insists that electronic information resources offer enormous opportunities of educational value. While this is true, they may also offer persons with illegal or unethical purposes avenues for reaching students and teachers. The Department lists some of the inappropriate uses that may occur as:

- using copyrighted material in reports without permission;
- using the network to send/receive inflammatory messages;
- creating a computer virus and placing it on the network;

using the network to send/receive a message with someone else's name on it;

using the network to send/receive messages that are sexist and contain obscenities;

using the network for sending and receiving a large number of personal messages (p. 1-2).

All users of networks should realize that the inappropriate use of electronic information resources can be a violation of local, state and federal laws (California Department of Education, 1994).

A policy should reflect the needs of the school including the age and grade levels, the curriculum and the community (Carlson, 1995). Carlson suggests that although needs are distinct, some aspects of successful policies are universal. According to his outline, an effective use policy will:

- assign responsibility to the user;

- identify the purpose of resources as curriculum-based;
- state that the use is a privilege rather than a right;

- set guidelines for acceptable use of hardware and software;

- describe rules of etiquette and ethics;

- address issues of security;

- give parents responsibility to accept and monitor, or to waive their child's use of District resources (p. 3)

The following paragraphs summarize suggestions for the development and distribution of a school technology policy.

Acceptable Use Policies should be developed to meet a school's particular needs. The best approach is a contract that must be signed by all students, as well as their parents. The contract should list all rights and responsibilities of those who will access the technology, and clearly list the penalties for technology abuse. Each signed contract should be kept on file as a legal, binding document. A technology policy section should be added to the student/parent handbook. This should be a formal statement to students and parents about the appropriate use of technology in the school environment (see Appendix A for examples of Acceptable Use Policies).

Each teacher should understand all facets of the Acceptable Use Policy and agree to uphold it. Before officially announcing the policy, the particulars should be covered with *all* teachers. Teachers must realize their responsibilities.

Schools should consider scheduling a Technology Night for parents. Rationale for the policy should be explained and questions fielded. Teachers should sit with the parents and talk about their goals for the year and the exciting things students will be doing with technology. This could be the time when participants sign their policy contracts.

Teachers should be the prime communicators concerning the appropriate use of on-line access. The best way to prevent misunderstandings and undue concern is through open discussions with students and parents ("Technology safeguards", 1995).

Acceptable Use Policies and Internet Access

Some schools may find it necessary or desirable to have a separate policy for Internet access. Taking students onto the Internet means taking risks. The Internet has a great deal of inappropriate material. In their article on the dangers of Internet access (1995), the ISTE states "You have to consider the issue of student safety before your students become actively involved in network communication" (p. 5). Students should be educated about the dangers of the Internet.

Sperber (1995) talks about attitudes toward the Internet. He asks questions about the Internet being used as a tool that should be controlled, or one that should require users to control themselves. This is a question, says Sperber, that should be answered in a school's AUP. Neither answer is right or wrong, it is simply an approach. The literature suggests that the dangers might be exaggerated

many parents and educators feel threatened because they don't know what is "out there." The real danger is far overblown, fueled by sensational hype and fearmongering. Most of the publicity blithely disregards the fact that the vast majority of information on the Internet is "clean" and that the Net provides wonderful opportunities for research and learning ("Technology safeguards", 1995, p. 37).

The National Center for Missing and Exploited Children (NCMEC), has suggested some guidelines in their publication entitled *Child Safety on the Information Highway* (1994). It is suggested that the rules be posted in

classrooms for students to use. The publication emphasizes the importance of students not giving out personal information, reporting things that make students feel uncomfortable and following rules.

The literature includes some subtle and unobtrusive ways of providing supervision for students using the Internet. First, place those computers with on-line access in open, public areas. Anyone bringing up taboo material will be noticed immediately, particularly if the computers are located near teacher stations.

Second, limit access. Students should not be allowed unlimited “free time” to “surf” the Net at school. Limit on-line sessions to 15 minutes unless a student is working on a research-oriented project and gets approval for more time from the teacher.

Third, set up bookmarked browsers. Browsers can be installed in computers so that Internet access is available just by opening the application. If the browser is “bookmarked” to a list of preferred locations, it can be a popular resource for students - and it may also keep them from wandering into inappropriate areas.

Finally, let students know they will be trusted. There will be unsupervised occasions when students are left on their “honor” while accessing the Internet - perhaps in computer clubs or in the library. Most private-independent schools have found that, once students have been properly introduced to on-line

services and have been informed about a school policy on appropriate access, few problems occur ("Technology safeguards", 1995).

Some schools are turning to additional resources for controlling Internet access, including software and hardware, in an effort to avoid liability ("Technology safeguards", 1995). These filtering devices limit access to the Internet and other on-line services like usenet newsgroups, bulletin board services and chat groups. Most of the software packages are tailored for use on home personal computers but could be used on classroom computers. Filtering devices can provide some protection but they cannot block out all objectionable material. The greatest danger in using filtering devices is the false sense of security they often create.

Connolly (1995) takes another approach to the issue of network usage and monitoring students in Cyberspace and says,

The good news is that for all practical purposes there are: no police, few laws, great flexibility and power, and unlimited freedom. The bad news is that for all practical purposes there are: no police, few laws, great flexibility and power, and unlimited freedom (p. 86).

But freedom and lack of enforcement do not equate to permission to act inappropriately (Connolly, 1995). There are three simple reasons why users should act responsibly and show respect for the institution's policies. Connolly (1995) cites these reasons as it is illegal, it is unethical and it is not in their self interest, even if they never get caught. Connolly's approach stresses depending on the personal integrity of the users along with education and training.

Carlson (1995) suggests that the issue of acceptable use is so boundless and complex that it could be simpler to just ignore it “but we do so at our own peril” (p. 5). Carlson promotes a proactive stance that would include a strong AUP and a process for settling disputes should they arise. Clear policies, with buy-in from the users and support from administration will ensure accountability and responsibility. Control is primary, but students need guidance and supervision. To be successful, “technology safeguards and policies require the active participation of teachers, students and parents” (“Technology safeguards”, 1995, p. 38).

Research contends that the single most important factor in successful and appropriate use of information resources is the training and participation of teachers. The Technology Coordinator will be challenged to provide leadership in this crucial area of staff development.

The Technology Coordinator and Staff Development

Existing Programs

The Technology Coordinator is responsible for training teachers and helping them become information literate. Apablaza (1996) insists that one of

the most important responsibilities for any Technology Coordinator is the training of teachers.

From the pages of The Wall Street Journal, Tejada (1995) remarks "the biggest challenge isn't getting computers into the classroom, but instructing teachers in how to use them" (p. R6). Staff development is the key to successful technology implementation. Siegel (1996b) says that as the "initial infatuation" of computers wears off we are realizing that teachers have to be trained how to use technology. If teachers are not information literate then the equipment may just sit around and not be used." (Siegel, 1995b, p. 44).

To aid educators and help the nation focus on the issue of staff development, teacher training was added to GOALS 2000: The Educate America Act, and the appropriate funding was allocated (Lauro, 1995). The Bush and Clinton administrations have spearheaded this national education mission which has been signed into legislation by Congress.

Most educators seem to agree that technology staff development is not happening - not yet. "They've been trying so hard to get technology into the hands of kids that they forget it's the teachers who direct what goes on in the classroom" (p. R6). Siegel (1995b) says most people will talk about how important staff development is and how they are doing it faithfully, but "intention is a far cry from reality" (p. 43). Electronic Learning magazine conducted a survey on technology staff development programs and found a lot of good intentions, but more talk than action. Several findings stand out

in the areas of budgeting, offerings, satisfaction with training, weaknesses and participants.

The study found that despite the lip service about the importance of technology staff development, 28 percent of the respondents spend not one penny on it. On average, staff development makes up only 8 percent of technology budgets (Siegel, 1995).

Even though nearly everyone (60 percent of *Electronic Learning* respondents) talked about the importance of integrating technology into the curriculum, when asked to describe their most recent offering, 66 percent of respondents said they gave straight workshops on specific software titles or hardware, rather than on how to use technology as a tool to expand and enrich the curriculum.

Technology trainers and the teachers often differ tremendously in their satisfaction about the technology training. Sixteen percent of *Instructor/Middle Years* respondents said they were dissatisfied with their technology training. *Electronic Learning* respondents, for the most part the trainers, said only 4 percent of their teachers were dissatisfied with their training.

Both participants and trainers responded that not enough time, inadequate hands-on practice, and insufficient follow-up were weaknesses of the programs offered. Only 6 percent of *Electronic Learning* respondents reported their schools or districts gave or loaned technology equipment to teachers, or

offered a discount for teachers to buy their own equipment, following their training - all of which can address these weaknesses.

Though principals are considered gatekeepers for buying technology for their schools, 41 percent of *Electronic Learning's* respondents said their schools or districts did not offer technology staff development for principals.

Tally (1995) emphasizes that "the number one reason for teacher dissatisfaction with technology training is that there is not enough time allotted to learn" (p. 14). The problems with current training to be related to adult learning styles. Staff development programs need to take into consideration the slow process of teacher change. Adults bring a more developed set of beliefs to the table. Teachers develop ways of doing things and these things have been proven to work over time. Adults do not learn new things all at once, but like children they develop new skills over time.

Siegel (1995b) suggests that perhaps the contrast between talk about technology staff development and the reality of how committed schools really are comes out most badly when the conversation turns to money. "We're spending millions of dollars for acquisition of software and hardware and refitting buildings, what about refitting teachers?" (p. 49). The type of support that Tally suggests is expensive. Technology budgets may need to be reappraised since the cost of technology staff development may very well be greater than the cost of hardware and software. Siegel (1995b) presents an alarming figure that shows 28 percent of survey respondents said they spend nothing on staff

development. On average, schools are spending only 8.3 percent of their technology budgets on staff development.

In discussing topics for staff development, Zeitz (1995) states that it is critical to present information that the faculty and staff consider useful and important so that they will be willing to spend the extra time to attend the training classes. Zeitz suggests the Technology Coordinator consider performing a needs assessment by using a questionnaire. The questionnaire should be designed to determine how faculty and staff are using technology, what areas they would like to learn about through training, and when it would be most convenient for them to attend training. Lauro (1995) says that involving teachers in the needs assessment early in the process will assure success.

Methods and Approaches

As Technology Coordinators design staff development programs, they should consider the different options, methods and approaches available to them. The goal, says Lauro (1995) should be to find cost-effective ways to improve the processes of education, teaching and learning.

Lauro (1995) includes five general options available to Technology Coordinators and those responsible for staff development. These options

include the comprehensive approach, the one-shot deal, conferences, in-house development and holistic video-based instruction.

The comprehensive approach involves bringing in experts and trainers to operate staff development sessions. This approach is effective because it involves consistent training sessions with specific goals and objectives. The financial commitment is substantial by the time the trainers, presenters and substitutes are paid.

The one-shot deal approach is probably the most common according to Lauro (1995). A presenter comes into the school before the year starts and staff members spend one to three days on a specific topic. The challenges of this approach include lack of follow-through and on-going reinforcement. Staff only implements what they remember from a couple of days of instruction. Lauro (1995) says that the lack of follow-through makes this approach one of the most expensive forms of staff development. Similarly, Spriggs and Bohannon (1995) mention institutes as a training option. They describe institutes as "events scheduled for one or more days, offering a menu of sessions revolving around integrated themes, with expert consultants and opportunities for collegial discussion and planning" (p. 71). Spriggs and Bohannon also discuss seminars and workshops as training methods worth considering.

Conferences present another option for staff development. They provide massive amounts of information in a short period of time. Lauro

(1995) explains the pros and cons associated with this abundance of information. Those who attend the conference must be able to filter through the information and decide what is valuable. Since only a few teachers will be sent to each conference, other teachers may resent not being sent themselves. It is important that the information and ideas collected at conferences be brought back to the school and shared. Spriggs and Bohannon (1995) also mention conferences and stress the importance of networking to share information.

In-house training is effective because trainers are on-site and available for on-going support. Follow-through has been identified as an invaluable component to the success of staff training programs (Lauro, 1995). This approach is challenging for the in-house trainer. They must create interest and enthusiasm, keep up-to-date on issues and provide continuing support. Trainers must be trusted by teachers and viewed as allies and supporters.

Along the same line of thinking, Spriggs and Bohannon (1995) suggest cadre team development as a method of training. Cadre training involves training an individual, or core group of individuals, and giving them the responsibility to aid implementation of technology. Following the cadre approach to training, an individual from a curricular department would be selected, or volunteer, to participate in the training. Upon completion of the

training, the individual would take responsibility for conducting staff development sessions with the faculty from their department.

Holistic-based video is defined by Lauro (1995) as “a full year of monthly reinforcement, in video format, of research-based educational concepts” (p. 64). Videotapes are produced every year and include guidebooks to facilitate group discussion. Some videos show teachers teaching and having success in the classroom. This is valuable for peers using the videotapes. Another benefit of this approach is the flexibility of scheduling. The approach is also very cost-effective. Spriggs and Bohannon (1995) also mention video study as an effective method of training. They suggest that video study may incorporate independent or group study through the use of commercial or locally produced videotapes.

Siegel (1995b) reports that 70 percent of teachers surveyed claim that teachers conduct most of the staff development sessions in their schools. Workshops are also conducted by Technology Coordinators and Librarians. Siegel also reports that half-day workshops held during or after school seem to be most popular.

Schmeltzer (1995) introduces the concept of training over the Internet. He suggests that this trend is gaining in popularity. Pepperdine University offers a degree in Educational Technology and most of the work is done on-line. The On-line Internet Institute offers on-line activities designed to help integrate use of the Internet into the curriculum. Another

on-line resource is the Teacher Education Internet Server. This service provides resources and instructional materials for pre-service and in-service teachers.

The most effective staff development approaches may incorporate several of these five approaches. Lauro (1995) suggests that providing options can only lead to better staff development. There is no one best way of training teachers to use technology. The use of multiple training strategies provides for the most successful approach.

Keys to Successful Programs

The literature is full of tips and suggestions for successful technology staff development programs. Siegel (1995b), Solomon and Solomon (1995), and Kutner (1992) describe key elements of exemplary technology staff development in the areas of planning, design, implementation and evaluation.

Siegel (1995b) and Solomon and Solomon (1995) list on-site follow-up, access to technology, teachers training teachers and mandatory staff development, as important to the success of any technology staff development program.

Follow-up with local staff is crucial. Even if outside consultants are used for the training, local individuals should be available for follow-up support. On-

site support people are essential to make sure everything is up and running. If technology does not work when teachers need it, they will not use it.

It is also imperative that teachers have access to the same technology as they were trained on (Siegel, 1995b). Solomon and Solomon (1995) suggest “give teachers technology they can take home” (p. 38). Teachers should be encouraged to take computers home where they can learn and practice in private.

Siegel (1995b) recommends that teachers be the primary trainers of teachers. Solomon and Solomon (1995) also promote the concept of teachers collaborating with teachers. Teachers can share ideas and help one another. Success is inspiring and teachers should share and celebrate their successes. Hearing about success helps other teachers adapt great ideas and new projects. Telecommunications can offer one way for teachers to communicate their successes.

Another key to the success of a technology staff development program is the requirement that learning to use technology is mandatory, not voluntary (Siegel, 1995a). Principals, superintendents, and other administrators should also be required to take staff development courses with their teachers. The time for technology staff development should be integrated into teachers' work schedules (Siegel, 1995a). Solomon and Solomon (1995) suggest stretching the work day in order to give teachers the professional time and opportunities they need to do their job.

The literature also includes performing a needs assessment and involving teachers in planning and evaluation as key elements of an exemplary technology staff development program.

Kutner (1992) emphasizes the need for the trainer to perform a needs assessment and lists this process as an essential component of an effective technology staff development program. Zeitz (1995) refers to performing a needs assessment as the first step in good program design. The trainer should perform a needs assessment to determine teachers' proficiency with technology and specific target skills. The needs assessment should be performed to assist in designing the content of the training sessions.

Teachers should be actively involved in the planning and evaluation process (Kutner, 1992). When teachers are involved in identifying their professional development needs, the likelihood of the program being successful is dramatically enhanced (Lauro, 1995). Effective technology staff development programs should provide teachers with knowledge and skills that they perceive as potentially useful in expanding and enriching the curriculum (Boser and Daugherty, 1996). Teachers are looking for information they consider useful and important enough that they will be willing to attend training sessions (Zeitz, 1995).

With all the new technology, teachers are wondering how they can effectively integrate technology into the curriculum. Many teachers are using multimedia to facilitate learning, understanding and exploration. Multimedia

provides an alternative instructional environment, in which students have control and self-initiated direction. Multimedia seems to facilitate individually guided student learning and provides freedom and flexibility. "Students may learn best when provided freedom and flexibility, and surrounded by technology rich resources" (Nicaise and Barnes, 1996, p. 210).

Peterson and Orde (1995) suggest that technology, as much as reading and writing, should be used as a tool across the curriculum. The authors continue by explaining that although there have been successful efforts to teach students to utilize computer software to prepare reports and give presentations, the technology is available to "access a wide variety of learning resources, to challenge students to learn more, and to express that learning in a variety of ways" (p. 70).

In their final recommendation, Rutherford and Grana (1995) explain that students are often more technologically literate than teachers. The authors suggest that teachers try a form of role reversal and tap the knowledge base of their students. This role reversal can inspire students to become more involved and active in the learning process. The environment that is created, leads toward a different learning relationship between students and teachers. The relationship shifts toward "cooperation and egalitarianism, thus enhancing learning" (p. 86). Technology Coordinators might also think about using students as a resource for ideas and information.

The most successful technology staff development programs also involve teachers in the evaluation process (Kutner, 1992). Routinely involving teachers in the evaluation process assists the trainer in determining which elements and strategies are most effective (McKenzie, 1991). Boser and Daugherty (1996) report the lack of effective feedback from teachers during program evaluation, as a major flaw in many programs.

It is important to remember that teachers will have fears that may prevent them from adapting their teaching to include technology. Rutherford and Grana (1995) discuss some issues that may prevent teachers from learning and using new technologies. First, teachers may have a fear of change. They may adopt the attitude of "I've come this far in my life without needing this technology, so why do I want to learn it now?" (p.83). It may be frightening, but not adapting is suicide, say the authors. Teachers may also be wary of the time required to learn and adapt technology into the curriculum. Another issue is the fear of appearing incompetent in front of peers and students. Finally, teachers may have a fear of just not knowing where to start.

Teachers who have embraced technology report many benefits including more time for individual work with students, less time needed for lecturing, and more opportunities to serve as facilitator, guide and coach. ("Developing a favorable", 1995). Tejada (1995) reports similar benefits as stated by teachers including "I spend more time with individual students" and "I spend less time lecturing to the entire class" (p. R6).

Although no one can accurately predict where technology is headed, one thing seems to be certain - teachers will play a crucial role in integrating technology into schools. It has been suggested that if teachers believe in technology and believe that technology will benefit their teaching and their students, they can serve as the most effective promoters of technology ("Developing a favorable", 1995). The Technology Coordinator, and a successful staff development program, will play a key role in empowering teachers.

This chapter has presented the responsibilities and roles that are assigned to Technology Coordinators. The literature reports that the Technology Coordinator should have a strong academic background, as well as an extensive knowledge of technology. These qualifications will enable the Technology Coordinator to shoulder a myriad of responsibilities including network administration, policy making and staff development. All three roles are important, but staff development is often identified in the literature, as most critical to the success of technology in schools. The Technology Coordinator may have the opportunity to delegate many of the network administration responsibilities to a technical support person. Policy making may be spearheaded by administration. Thus, staff development remains the most important responsibility of the Technology Coordinator.

Technology Coordinators need successful models and quality support materials to guide them in their daily activities, and especially in designing their

staff development programs. In their research, Boser and Daugherty (1996) found limited information on staff-development practices in technology education. They concluded that it would be helpful if results from successful technology staff-development programs were shared and promoted. This project, and its instructional materials, were created, to serve as a resource for Technology Coordinators.

The following chapters will describe the Electronic Handbook project, including the Authoring Workshop and the Resource Center components. Chapter Three will outline the project objectives. Chapter Four will detail the design and development of the project.

CHAPTER THREE

Electronic Handbook Objectives

The main goal of this M.A. project is to develop an information resource for Technology Coordinators. The project, called The Electronic Handbook, includes an Authoring Workshop component and a Resource Center component.

The purpose of the Authoring Workshop is to present Technology Coordinators with a set of guidelines for building a successful technology staff development program. These guidelines encompass the areas of planning, design, implementation and evaluation.

In support of these staff development guidelines, the Jane Goodall multimedia software program is presented. The Jane Goodall program is a model product that resulted from a technology staff development program which followed the guidelines of the Authoring Workshop. It is this author's goal that both the process and the product will serve as valuable resources for Technology Coordinators.

The second component of the Electronic Handbook, the Resource Center, organizes and presents reference materials, related to the Technology Coordinator's job responsibilities and daily activities. The Resource Center includes sample policies, publications and organizations for Technology Coordinators, and a list of useful Internet addresses.

The interactive multimedia design of the Electronic Handbook will:

1. engage users by utilizing text and graphics to convey content.
2. provide a user-friendly interface by creating clean and concise screen designs, clearly labeled navigational guides and printable information.
3. provide the user with the freedom and flexibility to actively seek information under self-initiated direction.

Upon completion of the Electronic Handbook, the Technology Coordinator will be able to:

1. design a technology staff development program that clearly defines its goals, methods and instructional practices.
2. locate additional resources in support of their job responsibilities.
3. explore new ways to expand and enrich the curriculum through the use of multimedia technology.

CHAPTER FOUR

Design and Development of the Electronic Handbook

The Electronic Handbook, on CD-ROM, includes an Authoring Workshop component and a Resource Center component. The Handbook is designed to serve as a resource for Technology Coordinators, by providing resources and information to assist them in managing their responsibilities and daily activities.

When Jane Goodall, a famous scientist, was confirmed as a guest speaker, at Westridge School, the science faculty began developing curriculum to prepare the student body for her visit. Westridge School, where this author is currently employed as Director of Technology, is a private, girls school in Pasadena, California. As the science faculty reviewed and collected support materials, they came up with the idea to author a software program of their own. Faculty were aware of the interest that students had shown, about the use of multimedia software in their science classes. The science faculty was finding multimedia to be an effective method of engaging student learners and delivering content. The faculty expressed an interest in learning to use authoring software.

In response to this curricular need and faculty interest, a technology staff development program was launched. It was called the Authoring Workshop,

because the training would focus on learning to use an authoring tool. The product of the training would be a multimedia software program about Jane Goodall, which students would use in preparation for her visit.

Previously, Westridge School had successfully used the cadre approach for technology staff development. The Authoring Workshop was instituted as a cadre program, partnering a single science faculty member with the Director of Technology. Following the cadre approach, the science faculty member would participate in the training. Upon completion of the Authoring Workshop, the science faculty member would take responsibility for conducting authoring software training with other faculty members in the science department.

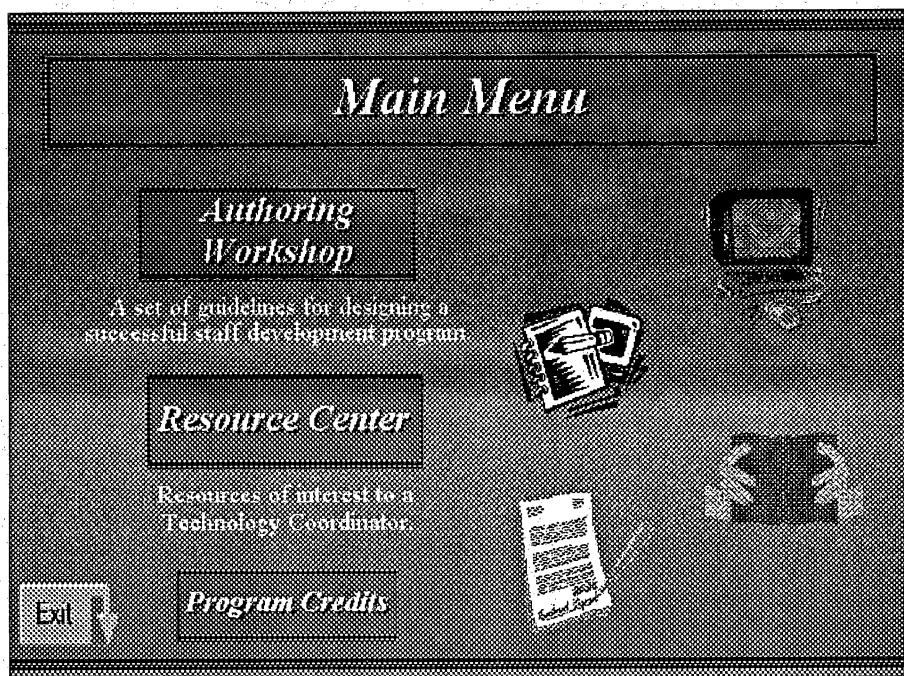
As a component of the Electronic Handbook, the Authoring Workshop focuses on the initial training of the science faculty member. It does not, however, investigate the subsequent departmental training. It also provides a set of guidelines for developing a successful technology staff development program. These guidelines apply to the planning, design, implementation and evaluation of a successful technology training program.

The Resource Center component of the Electronic Handbook organizes and presents information related to the Technology Coordinator's job responsibilities. The Resource Center includes sample policies, publications and organizations for Technology Coordinators, and a list of useful Internet sites. The Resource Center provides valuable information and quality materials, to support the Technology Coordinator in their daily activities.

Content and Structure

The opening screen of the Electronic Handbook is the "Main Menu" screen. This screen introduces the user to the program and the two main information sections which are titled Authoring Workshop and Resource Center (see Figure 1).

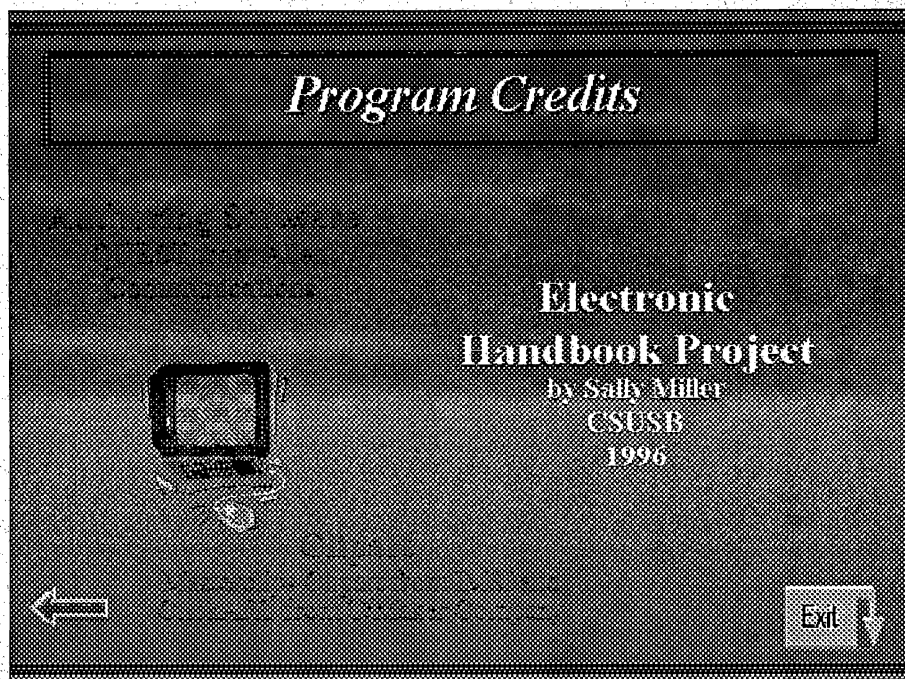
Figure 1. Electronic Handbook Main Menu Screen



The "Main Menu" screen also allows the user to access the "Program Credits" screen where the author and program sources are credited (see Figure 2).

Navigating through the program is designed to be clean and simple. To move through the program, the user clicks, with the mouse, on a "button." A button may consist of an image, icon or text. Navigational guides are easy to identify and consistently placed on each screen.

Figure 2. Program Credits Screen



The following sections will describe, in detail, the two main components of the Electronic Handbook.

Design and Development of the Authoring Workshop

The Authoring Workshop component of the Electronic Handbook details the model technology staff development program adopted at Westridge School. The following section will describe how the planning, design, implementation and evaluation guidelines for a successful training program were followed.

Planning

The first step in a successful technology staff development program is planning. Teachers should be proactively involved in the planning process. Planning involves establishing the relevance of the project, setting the curricular goals and deciding on a method of training.

The relevance of the project should be clear to all parties involved in the program. Teachers are interested in ideas that can be used in the classroom and put into practice immediately.

The relevance of the Authoring Workshop program at Westridge School was established early in the developmental process. Westridge science department faculty identified the need for a staff development program that would provide instruction on authoring. The goal was to develop a software

product about Jane Goodall. The software would then be used immediately, in the curriculum, to prepare students for Jane Goodall's visit.

The curricular goals of the Authoring Workshop were established in the early stages of the planning process. Its curricular goals were to meet the needs of students, teachers and the institution. The curricular goals of the Authoring Workshop were focused on gaining skills in authoring, and using the technology to develop computer-based instructional materials that will enrich the curriculum.

Multimedia was incorporated to provide learners with freedom and self-initiated direction. The target product, the Jane Goodall multimedia software, adopted the design of a constructivist application in that it would provide learners with a variety of stimuli and access to an alternative learning environment.

Another important piece of the planning process is selecting a training method. The Authoring Workshop program used the in-house, cadre development approach to training. Westridge School had been successfully using this approach in other technology staff development programs. In-house approach refers to the use of on-site staff to perform the training. The cadre approach involves training a single teacher and giving them the responsibility of training other faculty. The Authoring Workshop partnered the Directory of Technology at Westridge School with a single member of the science faculty.

Design

The second step in a successful technology staff development program is designing the program. The design phase involves creating a project timeline, developing the training curriculum and determining content of the final product.

The purpose of a project timeline is to keep participants on task and on schedule. The first step is to identify the key events that must happen in order to make the project successful. These key events are then prioritized and evaluated in reference to their time requirements and time is allotted for the project. Subsequently, the events are incorporated into a project timeline.

The timeline for the Authoring Workshop included the identification of the key events, in the design and development of the Jane Goodall software, namely:

- | | |
|---------|--|
| Event 1 | define the content areas |
| Event 2 | choose the types of media to be used |
| Event 3 | develop the training curriculum |
| Event 4 | collect the materials |
| Event 5 | perform the applications training |
| Event 6 | develop the screen design |
| Event 7 | do the authoring |
| Event 8 | test the final product (Jane Goodall software) |

Event 9 install the final product

Each of these key events was then assigned a time requirement. The amount of time between the onset of the Authoring Workshop program and the date of Jane Goodall's visit was ten weeks. The science faculty wanted to have the program available for use in classes, two weeks prior to Jane Goodall's visit. This meant eight weeks for the whole training program and software development. The teacher and trainer each committed an average of three hours out of every week day to the project. At the end of the project, the combined time commitment from the trainer and teacher was approximately 250 hours. The key events were plotted on a project timeline (see Figure 3).

The next step involved determining which applications and hardware lessons need to be delivered to teachers. The Technology Coordinator worked with the teachers and performed a needs assessment. This assessment of the training needs was to help determine a time requirement for each area of training. Teachers may already be proficient in some areas, so more time may be allotted elsewhere.

The needs assessment for the Authoring Workshop was conducted using informal interviews. The needs assessment determined that training was needed for the Quest authoring software, the Photoshop software and scanning. Teachers were to be trained in each of these areas through hands-on tutorials.

Figure 3. Authoring Workshop Project Timeline

Authoring Workshop

Project Timeline

Week One	Week Two	Week Three
<ul style="list-style-type: none"> • develop project timeline • define content areas • choose types of media to be used • develop training curriculum • begin collecting materials 	<ul style="list-style-type: none"> • Quest - lesson one covering creating frames, text and links • Photoshop - lesson one covering scanning and saving images • develop program flowchart • finish collecting materials 	<ul style="list-style-type: none"> • Photoshop - lesson two covering cropping images • Quest - lesson two covering adding graphics and buttons • begin developing text

Week Four	Week Five	Week Six
<ul style="list-style-type: none"> • continue developing text • screen design • begin programming text 	<ul style="list-style-type: none"> • Quest - lesson three covering adding transitions and animation • scan graphics • continue programming and testing 	<ul style="list-style-type: none"> • continue programming and testing

Week Seven	Week Eight
<ul style="list-style-type: none"> • continue programming and testing 	<ul style="list-style-type: none"> • finish programming • testing • installation • final testing and revisions

The third critical component in the design of a technology staff development program is determining the content of the product. The content that the program will deliver was considered carefully, and designed to meet the curricular goals of developing the Jane Goodall software. In addition to determining the content of the multimedia program, the types of media to be used were also agreed upon.

In the Authoring Workshop program, the Westridge science faculty determined the content of the Jane Goodall multimedia software. To facilitate information mapping, the content of the program was linked to the students' existing knowledge base. This linking process is a critical success factor in using multimedia for instruction.

The content of the software program covers three main areas and builds upon students' existing knowledge base. The emphasis is placed on Jane Goodall and her life and work. Areas of focus include:

- Jane Goodall in her early years

- Jane Goodall and her years in Africa and Gombe

- Jane Goodall today

- The Jane Goodall Institute

The second area of content focuses on individual chimpanzee biographies. The biographies include pictures, descriptions and stories, revealing the individual characteristics of each chimpanzee. The final content

area details milestones in the research on chimpanzees and their behaviors.

The media elements include digitized images, clip-art and some animation.

Another component to determining content is designing the flow of the program. After the content was determined, the presentation of the content was designed. This was accomplished through the use of storyboards, program flowcharts and descriptive text. Appendix B shows the descriptive text designed by the Westridge teacher.

Implementation

The third step in a successful technology staff development program is implementation. Implementation involves choosing the equipment, performing the technology training and assembling, installing and testing the product. These key events are also included on the project timeline as illustrated in Figure 3.

It is the trainer's responsibility to choose the equipment for the training. Continual access to equipment is important to the success of any technology program. The trainer should ensure that teachers have access to the same technology they were trained on.

The technology requirements of the Authoring Workshop include three software programs, a scanner and a computer. The primary software is the Quest authoring software which is used to do the programming. Photoshop is

the interface software used to acquire images from the scanner. Photoshop is also used to crop and manipulate images after they have been acquired and saved. Microsoft Word is used for word processing and creating the text for the program. The scanner is a color scanner and the computer is an IBM clone.

The software used in the Authoring Workshop training is identical to the software available on the science faculty's desktop computers and the science lab computers. The hardware used in the training is also comparable to the equipment used by the science department.

Additionally, the science teacher being trained was given access to a laptop computer to take home. The laptop was loaded with the software used in the training including Quest, Photoshop and Microsoft Word. In accordance with the software license agreement, a copy of Quest was given to the teacher to load on her home computer.

Implementation also involves performing the technology training. Technology training includes lessons on software applications, using different hardware and discussing design concepts. The training addresses the areas of weakness as identified by the needs assessment. Training is sequential, with a focus on skill development. Concepts build on each other.

The Authoring Workshop included three lessons on the Quest authoring software, two lessons on Photoshop and a discussion about effective screen design. Each training session was approximately 2 to 3 hours in length. Using

software tutorials, each lesson was directed at perfecting undeveloped skills.

The sequence of each training session was carefully planned.

The first Quest lesson focused on creating frames (screens), text and links. The hands-on software tutorial included one section on developing frames and text and another section on creating links. The collection of materials for the program was already in progress so Jane Goodall text was substituted for the suggested tutorial text. The ability to add text was a skill that was important to learn early. This skill needed to be developed before the programming of text could begin.

The first Photoshop lesson focused on acquiring and saving images using the scanner. The hands-on tutorial included a section on scanning and saving images. It was also important here to use actual pictures that had been collected for the program.

In the second Quest lesson, the scanned images were used in the instruction on how to add graphics. These are examples of how training should be sequential and skills and concepts should build on each other.

The implementation stage is where the product is assembled. The first step in assembling the product is detailing the design. After the product has been designed, the production can begin.

The first step in assembling the Jane Goodall multimedia software was finalizing the screen design. First, the teacher was given a presentation of effective screen design. This presentation was prepared, in advance, by the

trainer. The presentation included a list of guidelines for screen design and examples of effective and poor screen design.

The Jane Goodall multimedia software was designed using the following guidelines for creating an effective interface:

- consistent color scheme
 - soft background color
 - consistent font, easy to read
 - illustrations support text
 - limit quantity of information
- (McFarland, 1995, p. 68)

As a result of the training, the following screen design was created for the Jane Goodall software.

A consistent color scheme was achieved by the teacher, using only two different backgrounds, as evidenced by the white and green screen backgrounds. White and green backgrounds were used because of their softness and appeal to the eyes. Consistent and complementary text colors were used throughout the program.

The choice of font for textual information is very important. The teacher chose a consistent font type and the program's text uses only two different fonts. Figures 4, 5 and 6 consistently illustrate this pattern.

Figure 4. Jane Goodall Software Main Menu Screen

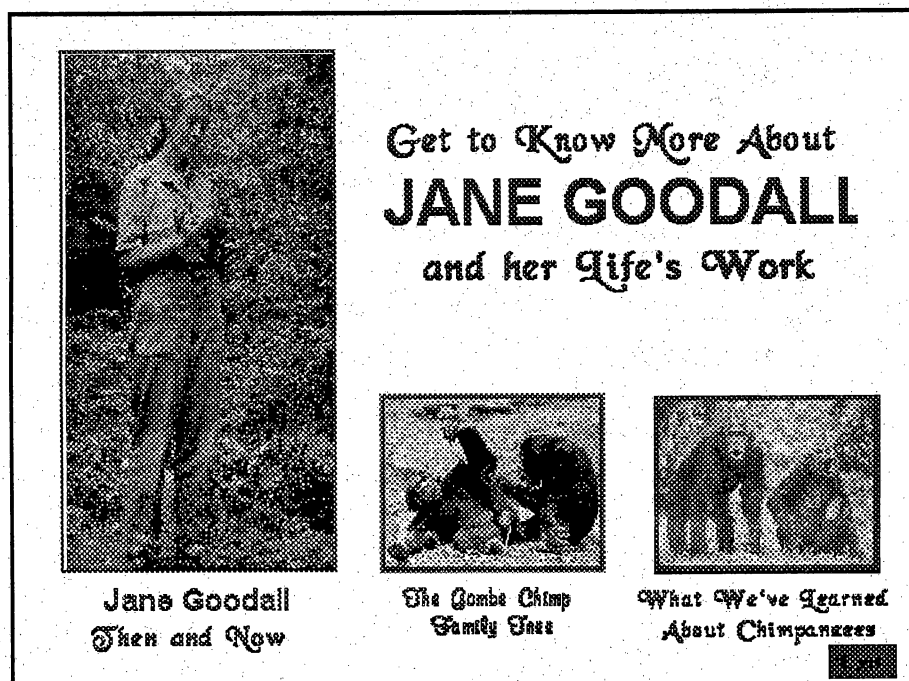


Figure 5. Jane Goodall Menu Screen

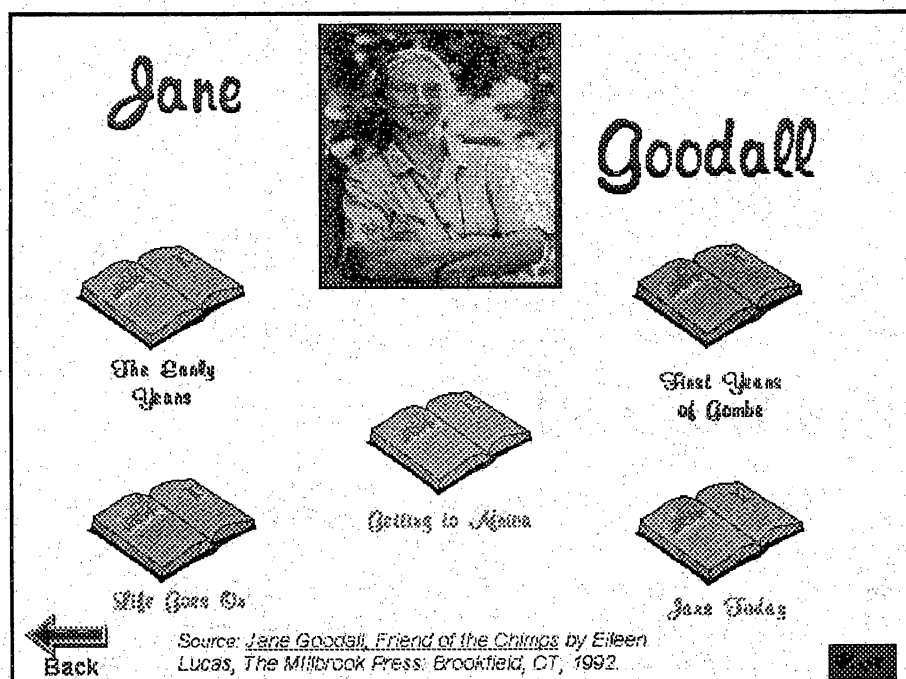
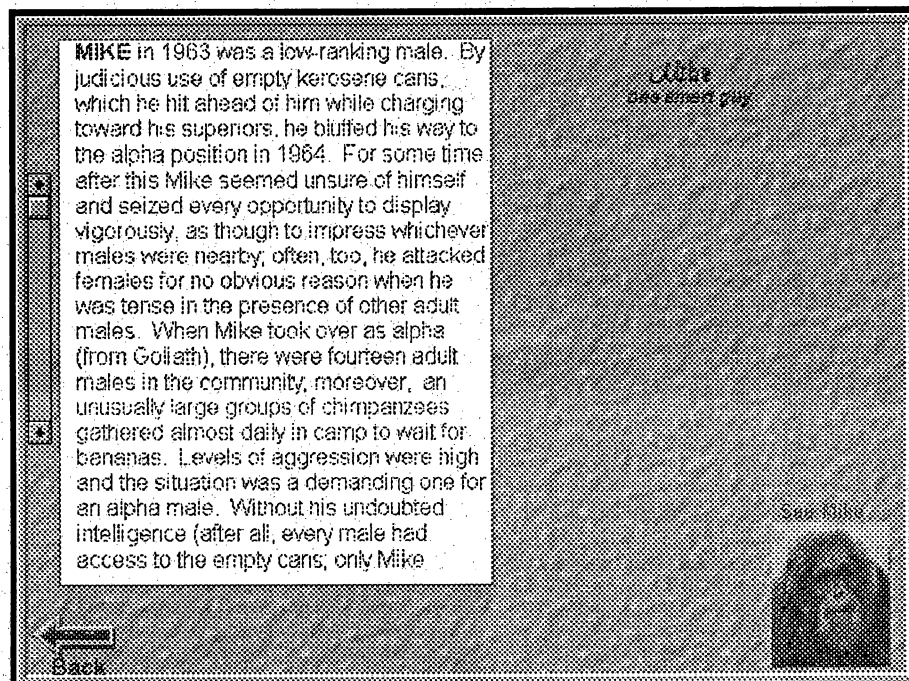


Figure 6. Individual Chimpanzee "Mike" Screen



The fonts chosen were standard fonts that are installed on every computer the program will be running on. If a font is not resident on a computer, the text may not appear, or may appear distorted.

Graphics and symbols can be powerful design tools. The teacher used illustrations to support and complement the text as shown in Figures 7 and 8. Pictures do not substitute for text and pictures are not used to present detailed information. The teacher attempted to choose graphics that contribute to the understanding of the text.

Figure 7. Individual Chimpanzee "Mike" Screen with Large Picture

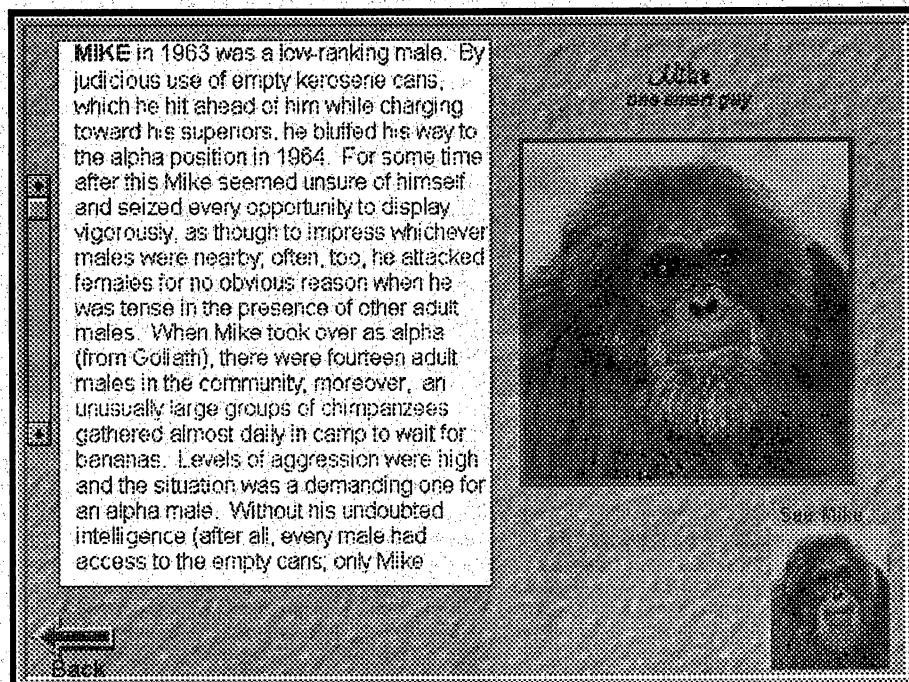
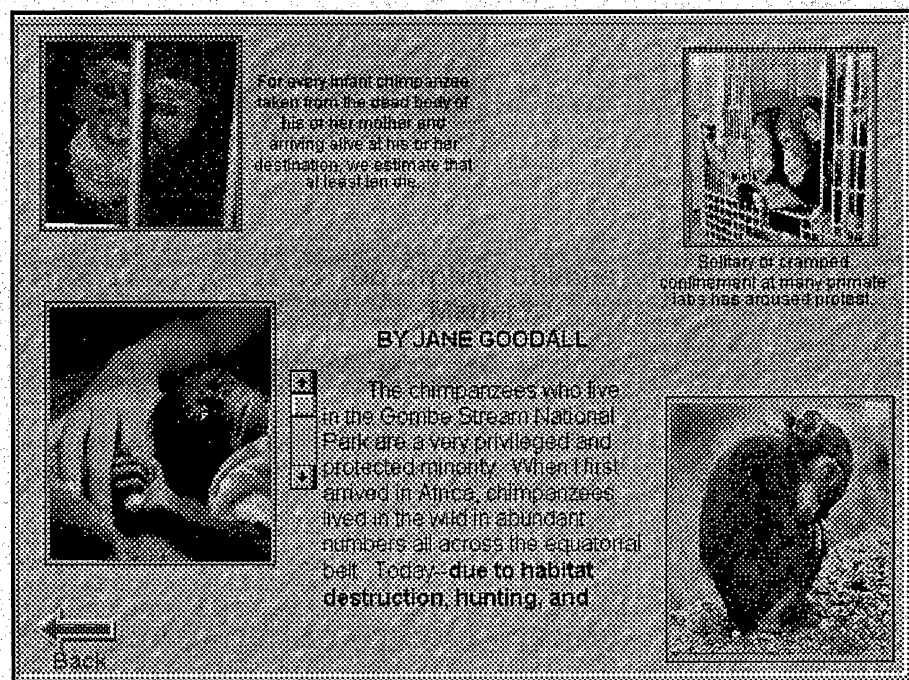


Figure 8. Do Orphaned Chimps Matter? Screen



To prevent learner frustration, the teacher limited the quantity of information per screen. This was accomplished, in part, through the use of scroll bars which limit the amount of text on each screen. The text was designed with a scroll bar so only a portion of the text is visible at one time. The remaining text is hidden and rolls into view when the user clicks on the scroll bar (see Figure 7). This design allows more text to be available without having a screen full of words. The scrolling fields also reset themselves each time a screen is opened.

Navigating through the program is designed to be clean and simple. To move through the program, the user clicks, with the mouse, on a "button." A button may consist of an image, icon or text. Navigational guides are easy to identify and icons are clearly labeled. For example, the icon used to move to the previous screen is identified by a left-pointing arrow and the text "back."

Figures 5, 7 and 8 illustrate how the teacher placed navigational icons in consistent locations throughout the program. The "back" button is consistently positioned in the bottom left corner of the screen.

Animation requires a more sophisticated approach to screen design. The teacher used animation to engage the user and maintain interest. The Jane Goodall multimedia software uses simple animation in three areas.

Using animation, the Gombe Chim Family Tree section introduces the user to the chimpanzees. During the animation, the user is shown each chimpanzee's name, one at a time. Each name is "dissolved" onto the screen.

The teacher used the sequence animation to reinforce the birth order concept of the program's content.

The teacher also used simple animation on the individual chimpanzee screens. These screens include text and a picture of the chimpanzee. Each screen presents a small picture which is animated and enlarged if the user clicks on the "see" button (see figure 7).

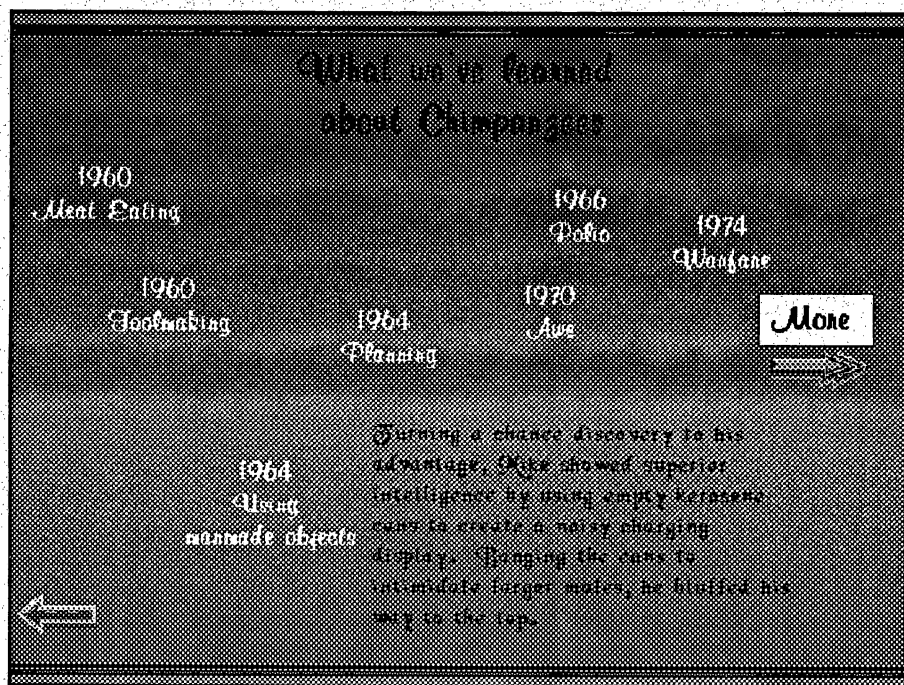
Animation is also used in the section on chimpanzee behavior. The user is presented with a series of behaviors and events, arranged in chronological order (see Figure 9).

When the user clicks on an event, the event travels across the screen and stops at the bottom of the screen. When the event stops moving, descriptive text fades onto the screen. After an appropriate amount of time, the event moves back across the screen to its original starting point. The teacher used animation to increase the user's interest in the event. Successful screen design will keep the learner engaged and provide a clear and consistent interface that supports the learning process.

After the screen design was finalized, the training led teachers into the production phase. Production in the Authoring Workshop program involved programming and scanning and saving graphics.

Whenever possible, programming was done one complete section at a time. This is important in case a project falls behind in schedule. If sections are

Figure 9. What We've Learned About Chimpanzees Screen



completed one by one, then at least a portion of the product is deliverable, even if time runs short.

The Authoring Workshop was scheduled so that the Jane Goodall software was produced section by section. The Jane Goodall section was done first, the Gombe Chimpanzee section second, and the Chimpanzee Behavior screens third. Text and navigational buttons were added initially, followed by graphics and animation last.

As the product was assembled, the testing began. Testing continued through installation. Testing included editing the content and checking program functionality.

Testing of the Jane Goodall multimedia software was a continual process that began with the onset of programming. The teacher edited text for spelling and formatting errors. Screens were tested for functionality. Scroll bars were tested to ensure they were attached to the correct set of text. Navigational buttons were tested to make sure the links between screens were accurate. Animation sequences were tested and evaluated for appropriate timing. In some instances, timing was changed to be slower or faster.

The teacher completed the final phase of testing after the program had been installed.

Installation occurred after the programming was finished and the final product had been thoroughly tested. Plenty of time was allotted for installation and for testing the installed program.

The trainer installed the Jane Goodall multimedia software on the Westridge School network so it could be accessed from every computer on the campus network. The program was set up to be accessed from a menu which also ran from the network. This configuration eliminated the need to install the program on the local harddrive of every computer on campus.

Testing was done on approximately 50 percent of the computers in each building. Students were used to test 100 percent of the computers in the high-use areas including the computer labs. Installation went smoothly with no significant problems.

The implementation stage was the most time consuming stage because it involved the labor-intensive processes of training, assembling, installing and testing the product.

Evaluation

The fourth and final step in a successful technology staff development program is evaluation. Trainers and teachers participate in evaluating the training program. Evaluation includes determining if program and curricular goals were met, evaluating the final product and making revisions.

The Authoring Workshop program was evaluated by the trainer and teacher, and deemed a success. Successful elements of the program included:

- program and curricular goals were met

- local staff was available for follow-up

- teachers had access to the same technology they were trained on

- newly acquired technology skills were immediately transferred into the classroom

As part of the evaluation process, the Jane Goodall multimedia software was evaluated. A questionnaire was developed to determine the effectiveness of the Jane Goodall multimedia software (see Appendix C). The evaluations were completed by one computer teacher and one science teacher. The overall

results of the software questionnaire were very positive. Respondents reported on the strengths and the weaknesses of the software.

Both respondents commented on how easy the program was to use. Once students found the program icon and got inside the program, they had no difficulty navigating.

Both respondents reported that the graphics were excellent and the single best feature of the program. One respondent commented on the appropriateness of the graphics and how they supported the textual information being presented. The other respondent reported that students said they felt like they had met Jane Goodall and the chimpanzees, personally, because they knew their faces so well after viewing the program. This same respondent also praised the descriptive comments next to each chimpanzee's name and picture. This simple descriptor helped students to remember the distinguishing characteristic of each chimpanzee.

Both respondents also commented, positively, on the thoroughness and amount of information in the program. One respondent stated that she liked how the program covered Jane Goodall's life from her early years, and included her work today. This respondent explained how this was important because students were very enthusiastic about Jane Goodall and her life's work, and the program gave them current information about programs and organizations they could contact to get involved.

The evaluators also reported on the limitations of the software. Both respondents suggested incorporating a review, or "test your knowledge" section. One respondent wanted to see this accomplished with some type of game. One respondent reported that there needed to be more exit buttons placed on additional screens. In addition, both respondents said that the speed of the Gombe Chimp Family Tree screen needed to be increased. The names of the chimpanzees should paint faster, with less time elapsing in-between each name.

Furthermore, one respondent suggested the dates be associated with each event on the behavior screens, in order to reinforce the chronological order of the events. Finally, a request was made to enable users to print the screens.

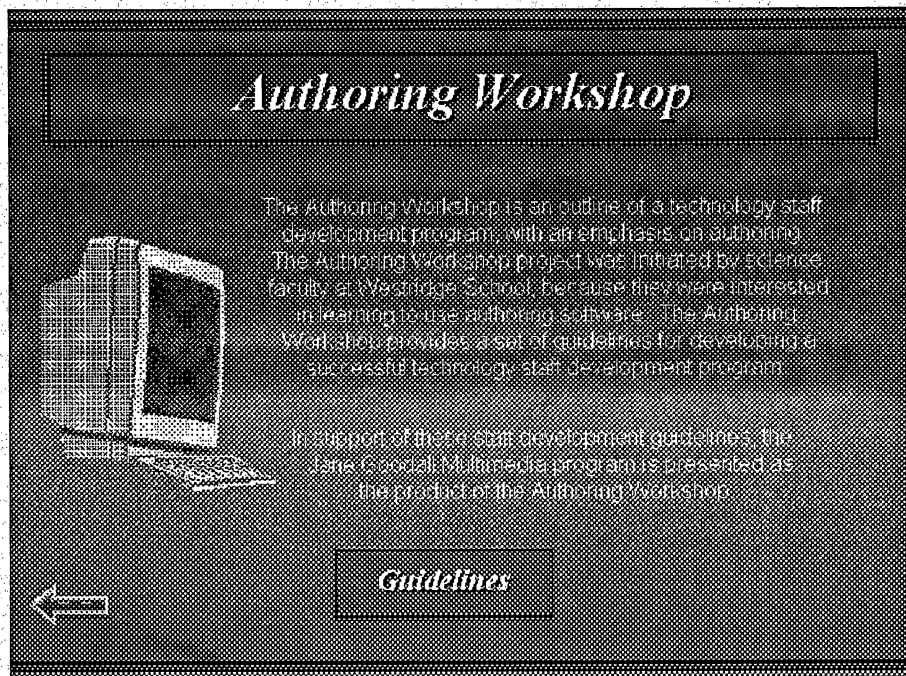
Based on the evaluator's suggestions, the teacher made some revisions to the software program. Specifically, the presentation speed of the Gombe chimps and the family tree was increased. Additionally, an exit button was added to the Jane Goodall Institute screen. Dates were added next to each event on the two behavior screens.

How to Use the Authoring Workshop

The Authoring Workshop section is accessed by clicking on the green "Authoring Workshop" button from the Main Menu. This section includes guidelines for developing a successful technology staff development program.

The first screen in the Authoring Workshop section introduces the user to the Authoring Workshop program and the Jane Goodall multimedia software. (see Figure 10).

Figure 10. Authoring Workshop Introduction Screen

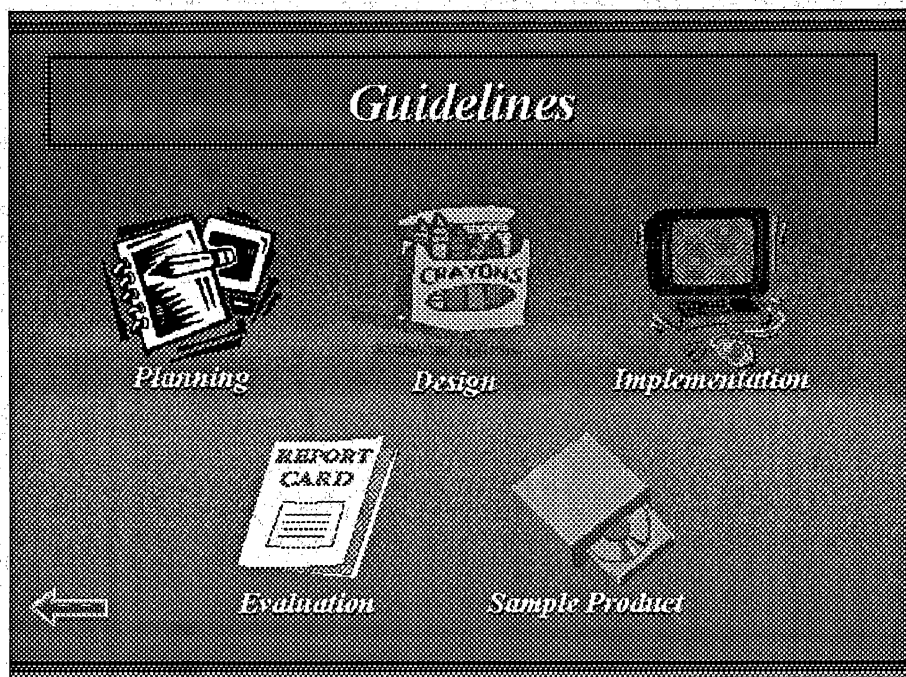


After the user clicks on the "Guidelines" button, they are taken to the Authoring Workshop Guidelines screen. This screen presents the four guidelines to building a successful technology staff development program. The guidelines include planning, design, implementation and evaluation. The guidelines are identified with graphically familiar icons and text (see Figure 11).

A fifth button on the Guidelines screen presents a link to the sample product.

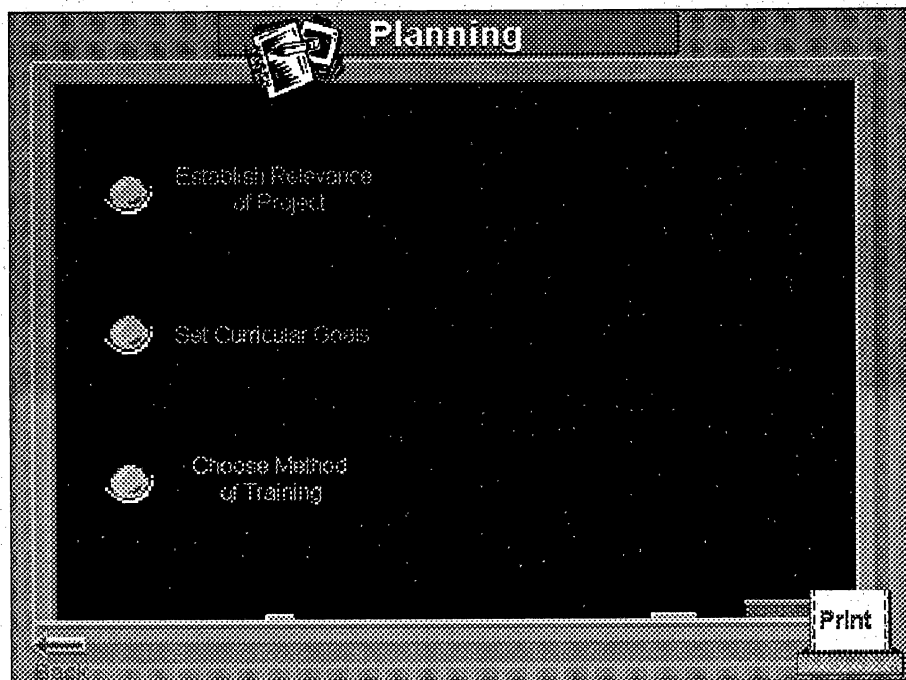
The sample product of the Authoring Workshop is the Jane Goodall multimedia software.

Figure 11. Authoring Workshop Guidelines Screen



If the user chooses the "Planning" button, they move into a section with information about planning a successful technology staff development program. The planning section presents three events which are important to the planning process. The events include establish relevance of project, set curricular goals, and choose method of training (see Figure 12).

Figure 12. Planning Screen



Each planning event is presented with a picture of a round button. When the user clicks on a button, the detail for the selected event appears on the screen (see Figure 13).

A "Print" button is located at the bottom right portion of the screen. The user may click on the "Print" button to print a copy of the screen. "Print" buttons are included on each of the Guidelines screens.

Each of the remaining Guidelines screens operate in a fashion similar to the Planning screen as illustrated in Figures 14, 15 and 16.

From the Guidelines screen, the user is returned to the Main Menu by clicking on the "Back" button twice.

Figure 13. Choose Method of Training Screen

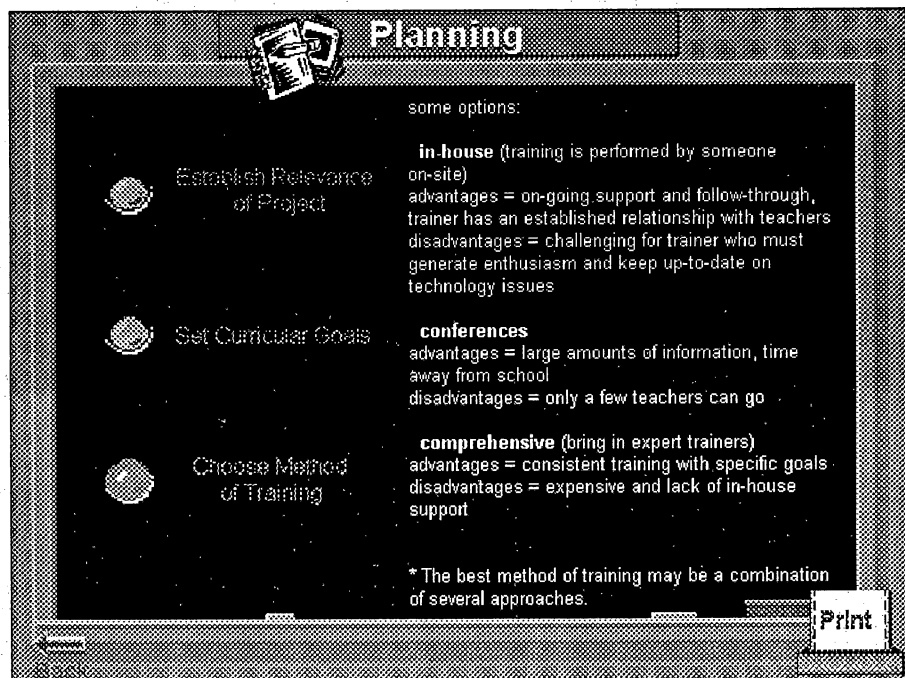


Figure 14. Create a Project Timeline Screen

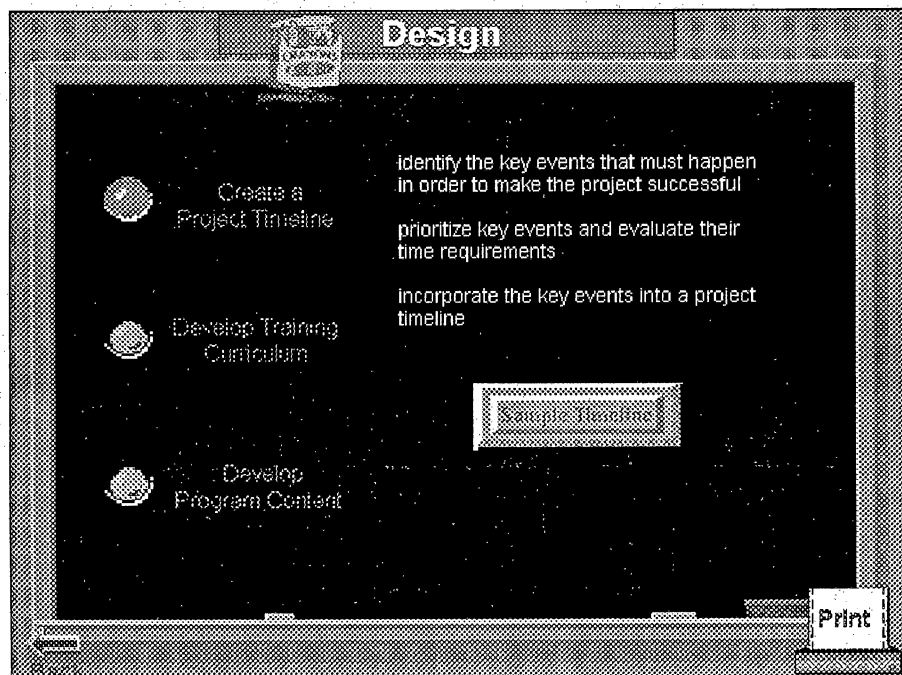


Figure 15. Install Product Screen

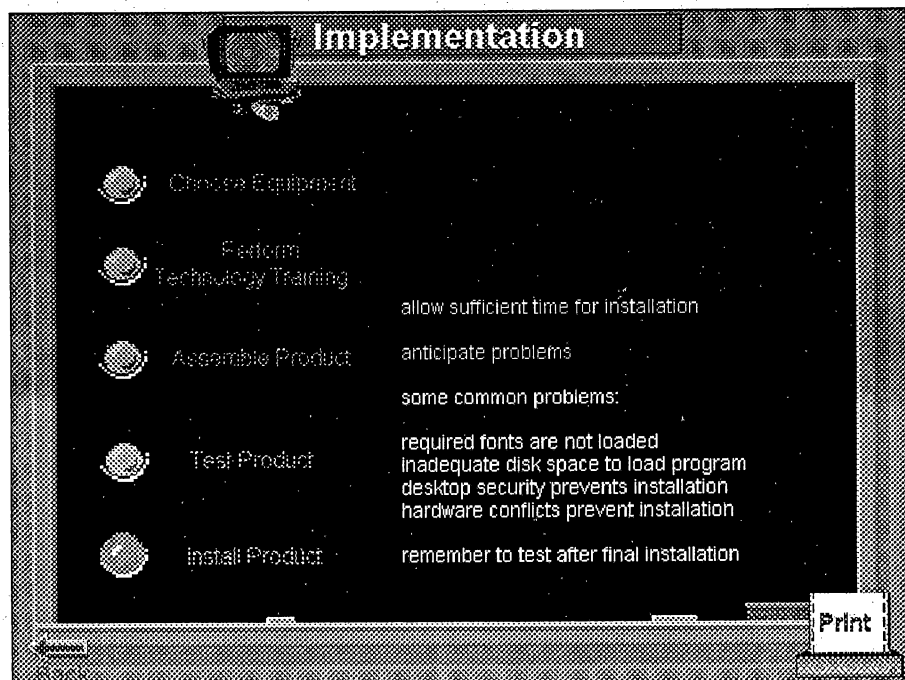
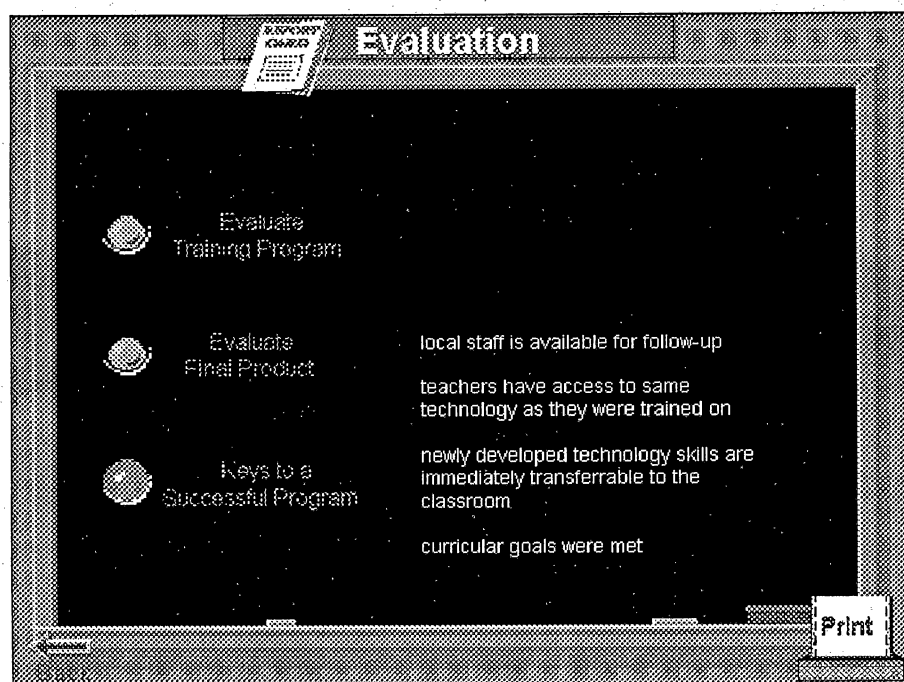


Figure 16. Keys to a Successful Program Screen



Design and Development of the Resource Center

The Resource Center component of the Electronic Handbook is a collection of reference materials, related to the Technology Coordinator's job responsibilities and daily activities.

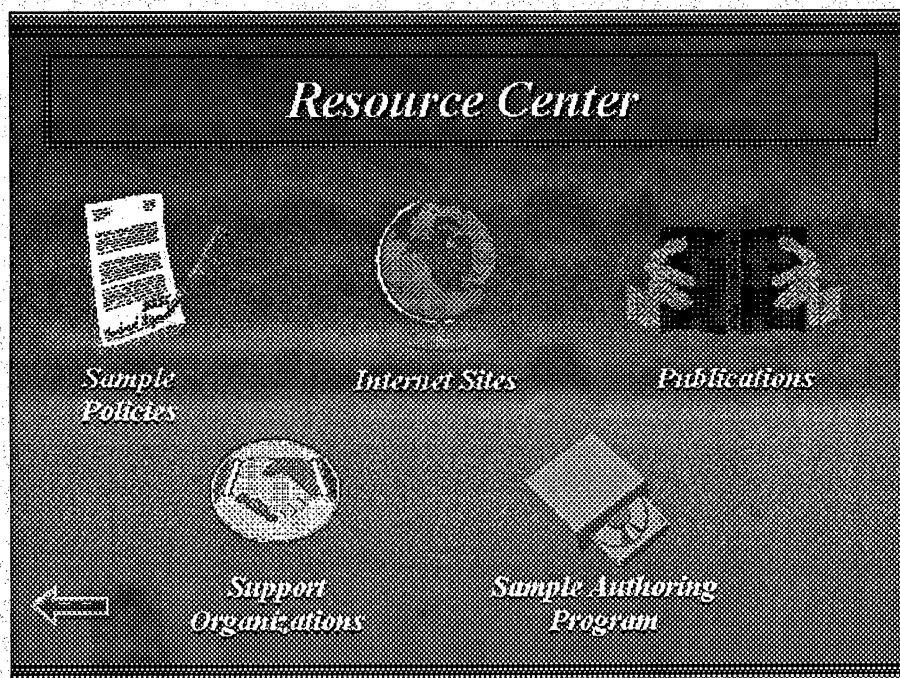
The Resource Center organizes and presents information on educational technology-related issues including networking, policy-making, technology planning and curriculum integration.

How to Use the Resource Center

From the Main Menu, the user may explore the Resource Center. The Resource Center section is accessed by clicking on the green "Resource Center" button.

The first screen in the Resource Center section introduces the user to four different collections of information. The collections include Sample Policies, Internet Sites, Publications and Support Organizations. Each collection is identified with graphically familiar icons and text (see Figure 17). A fifth button on the Guidelines screen presents a link to a sample multimedia authoring program. The sample product is the Jane Goodall multimedia software.

Figure 17. Resource Center Menu Screen



If the user chooses the "Sample Policies" button, they move into a section which provides examples of four different policies. The Sample Policies section has a main screen with links to the four policies (see Figure 18).

The Sample Policies main screen also presents two Internet sites which provide links to additional examples of acceptable use policies.

To view a sample policy the user must click on the "Exemplary School District AUP" button, "DeForest Area School District AUP" button, or the "Other Policies" button. The selected policy will appear, in a scrolling text box on a new screen, as illustrated in Figure 19.

Figure 18. Sample Policies Screen

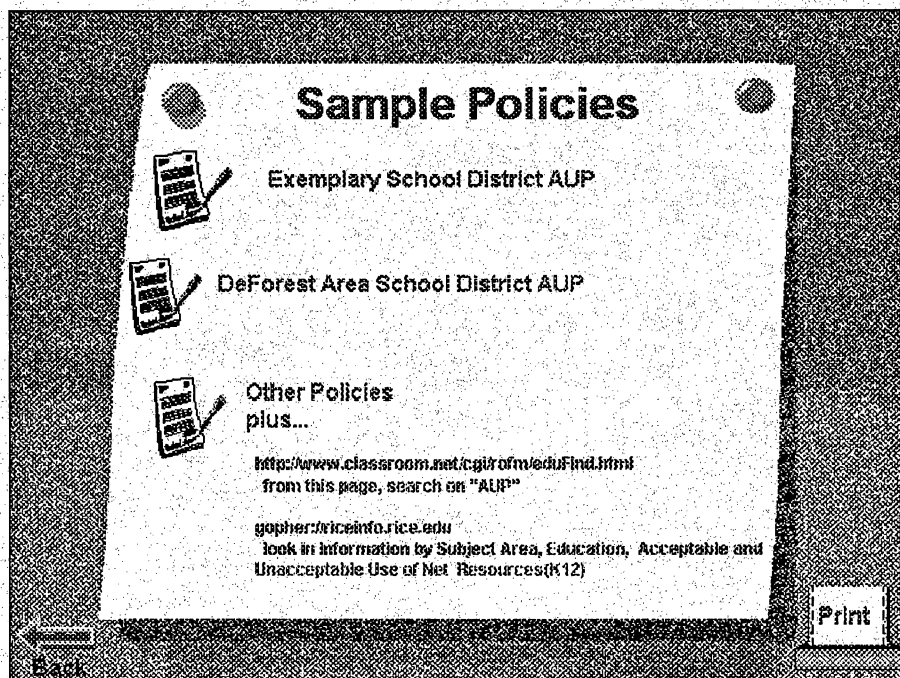
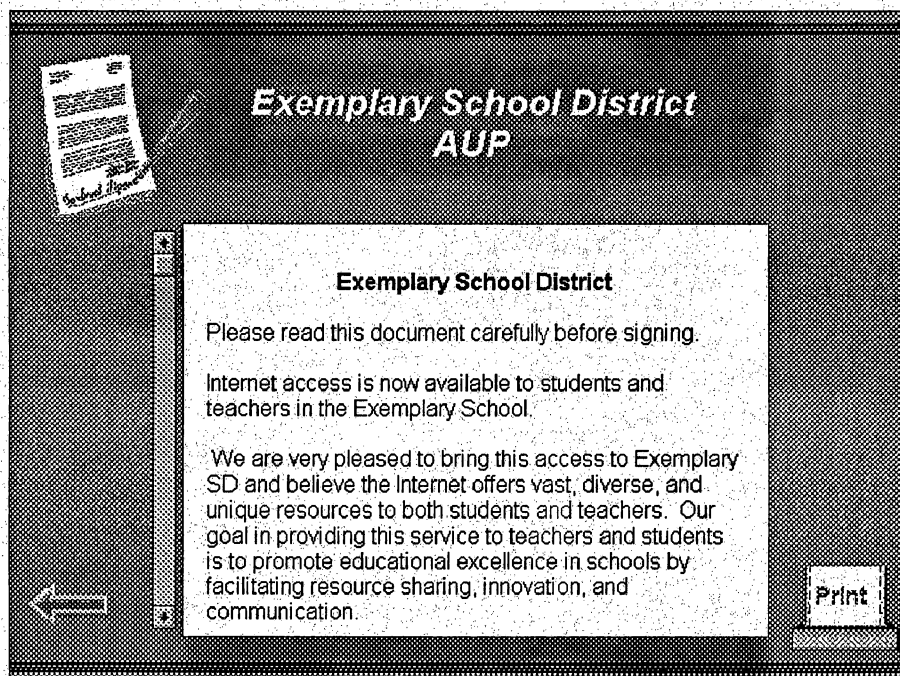


Figure 19. Exemplary School District AUP Screen



A "Print" button is located at the bottom right portion of the screen. The user may click on the "Print" button to print a copy of the document. "Print" buttons are included on each of the Resource Center screens.

From the Sample Policies screen, the user is returned to the Resource Center Menu by clicking on the "Back" button.

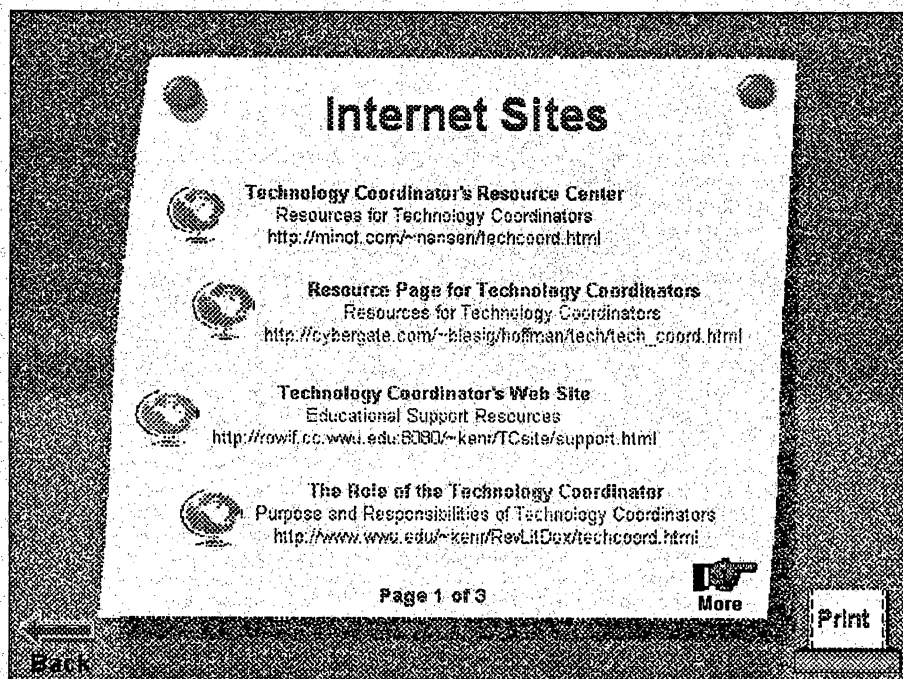
From the Resource Center Menu, the user may continue on to explore the Internet Sites section. The Internet Sites section is accessed by clicking on the "Internet Sites" button. The Internet Sites section presents addresses to Internet Sites where the Technology Coordinator can find valuable information to assist them in their daily activities.

The first screen in the Internet Sites section presents four Internet addresses (see Figure 20). These four addresses provide links to Internet sites that were specifically designed for Technology Coordinators. These sites include valuable information on policy making, technology planning, networking, staff development, the roles of the Technology Coordinator and links to some of the best instructional sites on the Internet.

Additional addresses provide links to a variety of Internet resources including information on citing electronic resources, searching the Internet, on-line educational databases and resource centers for educational technology.

The Internet Sites section includes three pages of addresses. To move forward, the user needs to click on the "More" button, which is identified

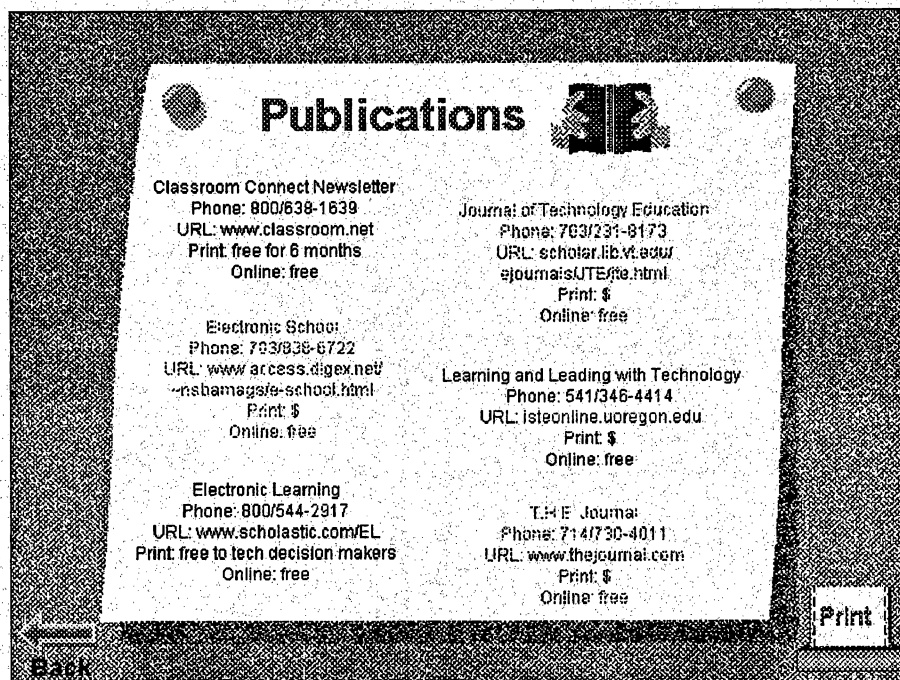
Figure 20. Internet Sites Screen Page One



graphically, with a pointing hand. The navigational icons are consistent with others throughout the Electronic Handbook. Clicking on the "Back" button will move the user to the previous screen. From the Internet Sites Page One screen, the user is returned to the Resource Center Menu by clicking on the "Back" button.

From the Resource Center Menu the user may continue on to explore the Publications section. The Publications section is accessed by clicking on the "Publications" button. The Publications section presents a list of magazines, journals and newsletters (see Figure 21). Each publication focuses on

Figure 21. Publications Screen

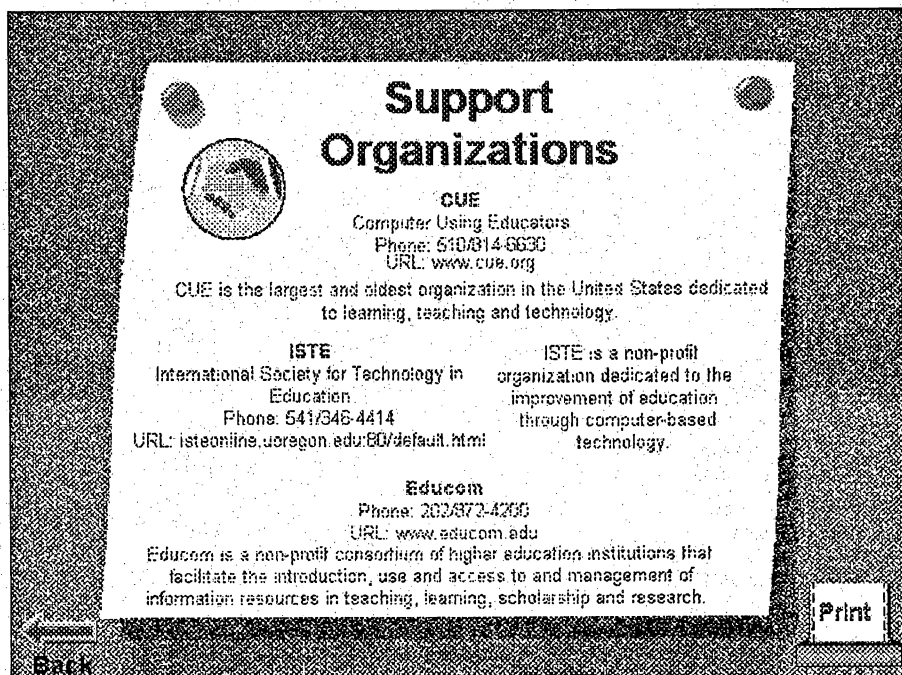


educational technology. The list includes the phone number, URL address and cost for each publication. In addition to the printed copy, each publication is produced on the Internet. Access to these on-line publications is free.

From the Publications screen, the user is returned to the Resource Center Menu by clicking on the "Back" button.

From the Resource Center Menu, the user may continue on to explore the Support Organizations section. The Support Organizations section is accessed by clicking on the "Support Organizations" button. The Support Organizations section presents a list of membership organizations (see Figure 22).

Figure 22. Support Organizations Screen



The focus of each organization is on educational technology. The organizations provide educators with access to quality resource materials, support and special interest groups, conferences and regular publications. The list includes contact information and a brief statement about each organization. From the Support Organizations screen, the user is returned to the Resource Center Menu by clicking on the "Back" button.

The final section included in the Resource Center is a sample multimedia authoring program. The sample product is the Jane Goodall multimedia software program. The Jane Goodall multimedia software program is the product of the Authoring Workshop program at Westridge School.

From the Resource Center Menu the user may access the Jane Goodall multimedia software by clicking on the "Sample Authoring Program" button.

Formative Evaluation of the Electronic Handbook

One computer teacher and one science teacher reviewed the Electronic Handbook, to assess its potential effectiveness. Both evaluators currently use technology in their curriculum, participate in technology staff development programs, and are influential technology decision-makers. Formal interviews were used to collect information from the evaluators.

The overall results of the evaluation were positive. Both teachers reported that the program was easy to operate and very user-friendly. One teacher commented on how easy it was to navigate through the program. Both teachers commented on the value of being able to print sample documents and screens of useful information.

Both teachers felt that the wide variety of resources was the most positive element of the program. One teacher reported that the Internet sites provided links to an incredible variety of resources. The other teacher thought the combination of technology staff development guidelines and the sample product, provided an excellent resource for teachers and trainers, trying to introduce multimedia into the curriculum.

One teacher thought the timeline was particularly valuable because it put the program into visual perspective. This same teacher also commented on the importance of listing the keys to successful technology staff development programs.

The teachers also reported on how the Electronic Handbook could be improved. One teacher wanted to see a section on technology curriculum integration. The other teacher thought a section on networking would have been appropriate. One teacher stated that she would have liked to be able to see some of the programming behind the screens in the Jane Goodall multimedia software.

Finally, both teachers commented that it would be difficult to evaluate the technology staff development guidelines, without actually participating in such a program.

Strengths and Limitations of Project

The Electronic Handbook provides materials and information Technology Coordinators can use to assist them in managing their job responsibilities and daily activities. The Electronic Handbook covers a wide variety of educational, technology-related topics including the areas of staff development, networking, policy-making, technology planning and curriculum integration.

The information is organized and presented in a compact, user-friendly format. The multimedia design provides the user with the freedom and flexibility to actively seek information under self-initiated direction.

It is this author's intent to improve education and learning through the use of technology, by sharing successful programs and valuable resources with other Technology Coordinators and technology educators.

The author recognizes the limitations of the Electronic Handbook. Before a technology staff development program can be undertaken, the program must have the full support of administration and faculty. The introduction of any technology staff development program requires a substantial time commitment by the trainers and teachers. Teachers may already have a demanding workload, and may not immediately see the educational benefits of a staff development program. Technology Coordinators must create enthusiasm and solicit support for the program.

The Authoring Workshop presents a model staff development program based on the in-house, cadre approach to training. This method of one-on-one and subsequent departmental training, may not be appropriate for all schools.

The presentation of the technology staff development guidelines requires that a program be designed and implemented, in order for its merits to be evaluated.

APPENDIX A: Acceptable Use Policies

Exemplary School District

Exemplary School District

Internet Use Agreement

Page 1 of 5

Please read this document carefully before signing.

Internet access is now available to students and teachers in the Exemplary School.

We are very pleased to bring this access to Exemplary SD and believe the Internet offers vast, diverse, and unique resources to both students and teachers. Our goal in providing this service to teachers and students is to promote educational excellence in schools by facilitating resource sharing, innovation, and communication.

The Internet is an electronic highway connecting thousands of computers all over the world and millions of individual subscribers. Students and teachers have access to:

- 1) electronic mail communication with people all over the world.
- 2) information and news from NASA as well as the opportunity to correspond with the scientists at NASA and other research institutions.
- 3) public domain software and shareware of all types.
- 4) discussion groups on a plethora of topics ranging from Chinese culture to the environment to music to politics
- 5) access to many University Library Catalogs, the Library of Congress and ERIC.

With access to computers and people all over the world also comes the availability of material that may not be considered to be of educational value in the context of the school setting. Exemplary School District has taken precautions to restrict access to controversial materials. However, on a global

**Exemplary School District
Internet Use Agreement
Page 2 of 5**

network it is impossible to control all materials and an industrious user may discover controversial information.

We (Exemplary School District) firmly believe that the valuable information and interaction available on this worldwide network far outweighs the possibility that users may procure material that is not consistent with the educational goals of the District.

Internet access is coordinated through a complex association of government agencies, and regional and state networks. In addition, the smooth operation of the network relies upon the proper conduct of the end users who must adhere to strict guidelines. These guidelines are provided here so that you are aware of the responsibilities you are about to acquire. In general this requires efficient, ethical and legal utilization of the network resources.

If an Exemplary SD user violates any of these provisions, his or her account will be terminated and future access could possibly be denied. The signature(s) at the end of this document is (are) legally binding and indicates the party (parties) who signed has (have) read the terms and conditions carefully and understand(s) their significance.

Internet - Terms and Conditions

- 1) Acceptable Use - The purpose of NSFNET, which is the backbone network to the Internet, is to support research and education in and among academic institutions in the U.S. by providing access to unique resources and the opportunity for collaborative work. The use of your account must be in support of education and research and consistent with the educational objectives of the Exemplary School District. Use of other organization's network or computing resources must comply with the rules appropriate for that network. Transmission of any material in violation of any US or state regulation is prohibited. This includes, but is not limited to: copyrighted material, threatening or obscene material, or material protected by trade secret. Use for commercial activities is generally not acceptable. Use for product advertisement or political lobbying is also prohibited.
- 2) Privileges - The use of the Internet is a privilege, not a right, and inappropriate use will result in a cancellation of those privileges. (Each student who receives an account will be part of a discussion with a

**Exemplary School District
Internet Use Agreement**
Page 3 of 5

Exemplary School District faculty member pertaining to the proper use of the network.) The system administrators will deem what is inappropriate use and their decision is final. Also, the system administrators may close

an account at any time as required. The administration, faculty, and staff of Exemplary School District may request the system administrator to deny, revoke, or suspend specific user accounts.

- 3) Network Etiquette - You are expected to abide by the generally accepted rules of network etiquette. These include (but are not limited to) the following:
 - a) Be polite. Do not get abusive in your messages to others. b) Use appropriate language. Do not swear, use vulgarities or any other inappropriate language. Illegal activities are strictly forbidden.
 - c) Do not reveal your personal address or phone numbers of students or colleagues,
 - d) Note that electronic mail (e-mail) is not guaranteed to be private. People who operate the system do have access to all mail. Messages relating to or in support of illegal activities may be reported to the authorities.
 - e) Do not use the network in such a way that you would disrupt the use of the network by other users.
 - f) All communications and information accessible via the network should be assumed to be private property.
- 4) Exemplary School District makes no warranties of any kind, whether expressed or implied, for the service it is providing. Exemplary School District will not be responsible for any damages you suffer. This include loss of data resulting from delays, nondeliveries, mis-deliveries, or service interruptions caused by it's own negligence or your errors or omissions. Use of any information obtained via the Internet is at your own risk. Exemplary School District specifically denies any responsibility for the accuracy or quality of information obtained through its services.

**Exemplary School District
Internet Use Agreement**
Page 4 of 5

- 5) **Security** - Security on any computer system is a high priority, especially when the system involves many users. If you feel you can identify a security problem on the Internet, you must notify a system administrator or your District Internet Coordinator. Do not demonstrate the problem to other users. Do not use another individual's account without written permission from that individual. Attempts to logon to the Internet as a system administrator will result in cancellation of user privileges. Any user identified as a security risk or having a history of problems with other computer systems may be denied access to Internet.
- 6) **Vandalism** - Vandalism will result in cancellation of privileges. Vandalism is defined as any malicious attempt to harm or destroy data of another user, Internet, or any of the above listed agencies or other networks that are connected to the NSFNET Internet backbone. This includes, but not limited to, the uploading or creation of computer viruses.

I understand and will abide by the above Internet Use Agreement. I further understand that any violation of the regulations above is unethical and may constitute a criminal offense. Should I commit any violation, my access privileges may be revoked, school disciplinary action may be taken, and/or appropriate legal action.

User Signature: _____

Parent or Guardian _____

Date: _____

**Exemplary School District
Internet Use Agreement**

Page 5 of 5

As the parent or guardian of this student, I have read the Internet Use Agreement. I understand that this access is designed for educational purposes. Exemplary School District has taken precautions to eliminate controversial material. However, I also recognize it is impossible for Exemplary School District to restrict access to all controversial materials and I will not hold them responsible for materials acquired on the network. Further, I accept full responsibility for supervision if and when my child's use is not in a school setting. I hereby give permission to issue an account for my child and certify that the information contained on this form is correct.

Parent or Guardian's Name (please print): _____

Signature: _____

Date: _____

SPONSORING TEACHER

(Must be signed if the applicant is a student)

I have read the Internet Use Agreement and agree to promote this agreement with the student. Because the student may use the network for individual work or in the context of another class, I cannot be held responsible for the student use of the network. As the sponsoring teacher I do agree to instruct the student on acceptable use of the network and proper network etiquette.

Teacher's Name (please print): _____

Signature: _____

Date: _____

Deforest Area School District

DeForest Area School District High School Internet Agreement 1996-97

Please read this document carefully before signing the opposite side.

Internet access is now available to students and teachers in the DeForest Area School District. We are pleased to bring this access to the DeForest Schools and believe the Internet offers vast, diverse and unique resources to both students and staff.

The Internet is an electronic network connecting thousands of computers all over the world and millions of individual subscribers. It provides students and staff with access to electronic mail communication; information and news from resources such as NASA, the Smithsonian Institution, and the Library of Congress; public domain software and shareware of all types; discussion groups on a wide-range of topics ranging from Japanese culture to the environment to music to politics; information from most universities and from thousands of commercial, governmental, and other sources.

On a global network it is impossible to control all materials and a persistent user may discover controversial information. The District believes that the benefits of Internet access to educators and students, in the form of information resources and opportunities for collaboration, far exceed any disadvantages.

The continued availability of the Internet in the school district relies upon the proper conduct of the users. Guidelines are provided here so that students and their parents or guardians are aware of the responsibilities that accompany the privilege of using the Internet.

Guidelines for Use of the Internet

1. The use of school computers must be consistent with the educational objectives of the DeForest Area School District. Accessing or transmitting materials that are obscene or sexually explicit is prohibited. Hate mail, harassment, discriminatory remarks and other antisocial behavior are unacceptable.

2. Transmission of any material in violation of any U.S. or state regulation is prohibited. This includes, but is not limited to, copyrighted material and threatening or obscene material.
3. Users shall abide by the rules of network etiquette. These include using appropriate language, respecting the privacy of other users, and not disrupting the use of the network by other users.
4. For their own safety, users should not reveal any personal addresses or phone numbers.
5. All communications and information accessible via the network should be assumed to be private property and subject to copyright protection. Use of these sources need to be credited appropriately as with the use of any copyrighted material. In some cases, authors' permission may need to be obtained before materials may be used.
6. Students may not subscribe to "listserves" or Usenet Newsgroups".
7. Attempts to gain unauthorized access to system programs or computer equipment is prohibited.
8. Any malicious attempt to harm, modify, or destroy data of another user is prohibited.
9. If a student gives another student their password, both students will have their Internet privilege suspended.

***High school staff members have the authority to determine what constitutes inappropriate use of the Internet and their decision is final.**

STUDENT AGREEMENT

I understand and will abide by the Internet Agreement. I further understand that any violation of these guidelines may result in my Internet privileges being restricted or revoked and also may result in school disciplinary action. If the violation constitutes a criminal offense, appropriate legal action may be taken.

Student's Name (please print) _____

Student's Signature _____

Date _____

PARENT OR GUARDIAN AGREEMENT

As the parent or guardian of this student, I have read the Internet Agreement. I understand that this access is designed for educational purposes. I recognize that some controversial materials exist on the Internet. I will not hold the School District responsible for materials acquired on the network. I hereby give permission for my child to use the Internet at school.

Parent or Guardian's Name: (please print) _____

Parent or Guardian's Signature: _____

Date: _____

APPENDIX B: Descriptive Text of the Jane Goodall Multimedia Software

The Jane Goodall multimedia software will contain three primary sections of information. The opening screen of the program will be the title screen "Get to Know More About Jane Goodall." This screen will introduce the user to the program and the three main sections of information. The title screen is the "home card" and will allow the user to access the other sections. Each screen within the program is called a frame, and the entire program is termed a title. From the title screen, the user will be able to navigate to any of the three information sections or exit the program by way of the credits screen.

The three information sections available from the title screen will include, "Jane Goodall Then and Now," "The Gombe Chimp Family Tree," and "What We've Learned About Chimpanzees."

"Jane Goodall Then and Now" will be the primary section. To access this section from the title screen, the user will click on either the picture of Jane Goodall or the text. The Jane Goodall section will have a main screen, or menu of its own. This section will include information about Jane's life and work, beginning with her childhood and including her work today. The user will be presented with an image of Jane Goodall and textbook icons representing the next five sections of information. The structure and design will allow the user freedom to choose where they will travel next.

If the user chooses to click on the "Getting to Africa" button they will move into a part of the program that recounts Jane's experiences in Africa. The user will be presented with an image of Jane as a young woman and complementary text.

If the user chooses the "Jane Today" button from the Jane Goodall menu screen, they could visit seven different sections addressing the work Jane is doing today. These sections will include The Jane Goodall Institute, orphaned chimps, Roots and Shoots program, ChimpanZoo program, chimp sanctuaries, Chimp Guardians program and the Partnerships in Understanding program. The second main information section of the program will introduce the Gombe chimpanzees. This section is accessed from the title screen by clicking on either "The Gombe Chimp Family Tree" text, or the picture above the text. The names of each chimpanzee will appear in chronological order by birth date and include a description of their position in the family.

From The Gombe Chimp Family Tree menu, the user may travel to sections on 12 different chimpanzees. For example, if the user clicks on "Mike", they will move to the "Mike" screen. In this part of the program the user can investigate the life and personality of each chimpanzee. These screens will include text and a picture of the chimpanzee.

The third and final information section of the program will address chimpanzee behavior. This section is accessible from the title screen by clicking on the "What We've Learned About Chimpanzees" button. This segment will

detail milestones in the research on chimp behavior. The user will be presented with a series of behaviors and events, arranged in chronological order.

When the user is ready to exit the program they may do so from the title screen, the Jane Goodall menu screen or the Gombe Family Tree menu screen. When the exit button is clicked, the user will be taken to the credits screen. On this screen the authors and sources will be recognized. From the credits screen, the "Exit Program" button will take the user completely out of the program.

APPENDIX C: The Jane Goodall Multimedia Software Questionnaire

Questionnaire

The Jane Goodall Multimedia Project

The purpose of this survey is to evaluate the Jane Goodall multimedia software program, and determine its effectiveness as a learning tool for students. Please answer the following questions to the best of your ability.

1. What grade level are the students you teach?
2. Estimate the number of hours spent by students, in class, working with the Jane Goodall program.
3. Estimate, on average, the number of hours spent by students, outside of class, working with the Jane Goodall program.
4. Were students able to easily navigate through the Jane Goodall program? Identify any problems students may have had in this area. Be as specific as possible.
5. Did the Jane Goodall program engage student learners? How did you determine this?

6. Could the students relate to the text and the graphics? How did you determine this?
7. Did the graphics match and support the text?
8. Was the content appropriate? Did the material relate to an existing knowledge base?
9. Was the quantity of information presented per screen appropriate? Please explain.
10. What was the most effective component of the Jane Goodall program? Why?

- 100

APPENDIX D: How to Install and Use the Electronic Handbook

Installing the Electronic Handbook

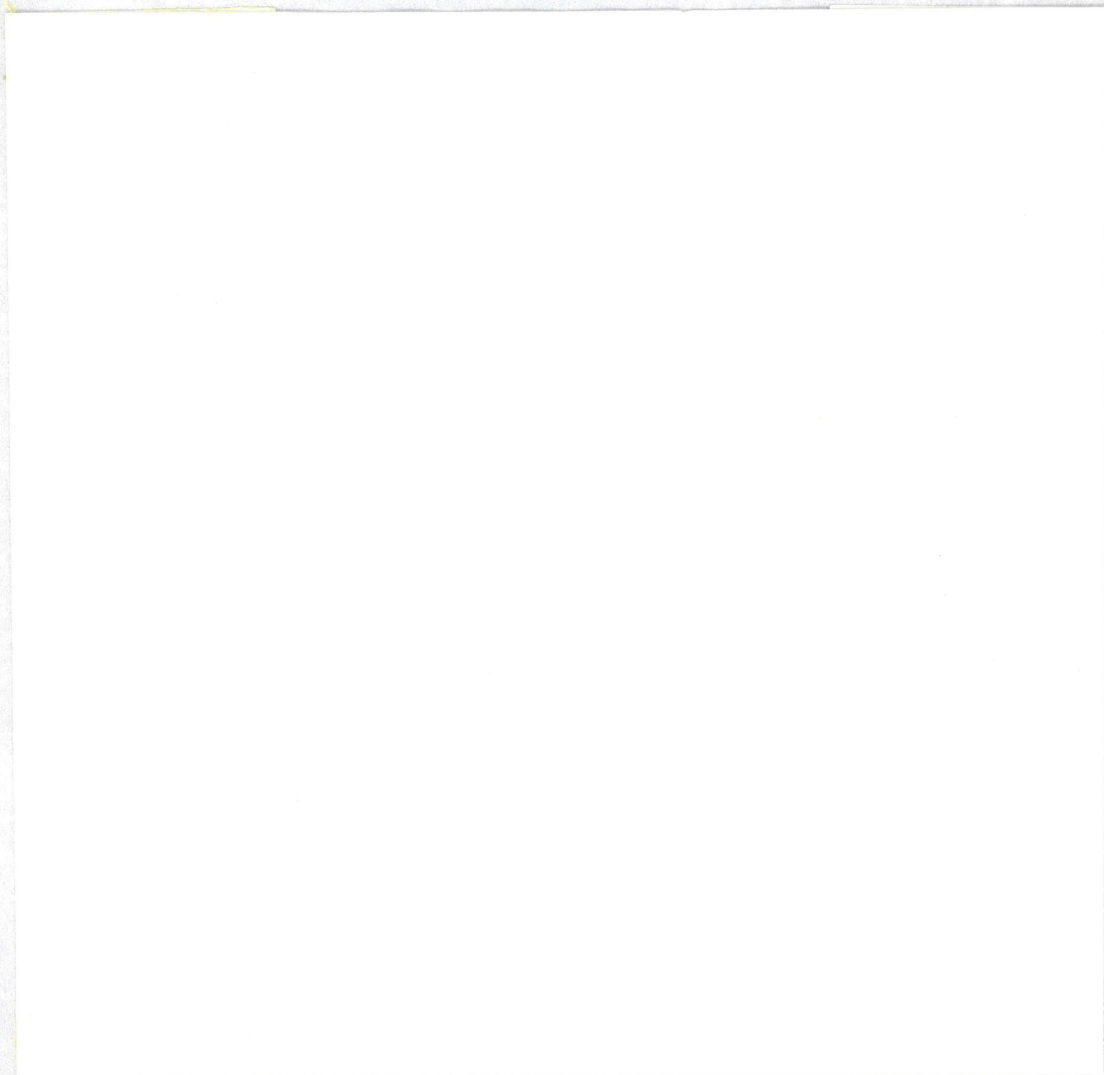
The Electronic Handbook is designed to run on IBM compatible computers running Microsoft Windows, version 3.1 or higher. The Electronic Handbook will not run on DOS or Macintosh computers. The computer must have a CD-ROM drive of 4x speed or greater.

The Electronic Handbook will run without copying any files to the local computer. Insert the CD-ROM into the computer. To run the Electronic Handbook software from Windows, click on File then click on Run. Change to the CD-ROM drive and click on the program called "chimps.exe"

Performance Notes:

If the computer does not have the Maryland and Merced fonts resident, sections of the Jane Goodall software will not be displayed correctly.

APPENDIX E: The Electronic Handbook CD-ROM



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